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/TSC Project Evaluation Series

The Rochester New York Integrated Transit Demonstration

Volume III: Appendices

DEPARTMENT OF
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Final Report
March 1979

Service and Methods Demonstration Program

U.S. DEPARTMENT OF TRANSPORTATION
Urban Mass Transportation Administration
and Research and Special Programs Administration
Transportation Systems Center

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16. Abstract

This report describes the conduct of and the impacts resulting from the implementation of a family of demand-responsive transit services and several related innovations in Greece and Irondequoit, New York, two suburbs of Rochester. The report covers the time period beginning with the implementation of PERT (for Personal Transit) services in August 1973 through July 1977. The initial Greece project did not become a federally-funded demonstration until after many of the innovations had begun. Nevertheless, this pre-demonstration period has been evaluated to the extent that data were available.

The report contains a description of the implementation process and the impacts of individual services and innovations on the level of service provided, transit demand, and transit productivity. The implications of the Rochester experience are summarized for the benefit of other localities considering the implementation of similar services.

The report consists of three volumes. Volume I contains an Executive Summary of the most significant demonstration findings. Volume II consists of a detailed description and analysis of the Rochester demonstration. Volume III contains the appendices, including a glossary, copies of measurement instruments, and tabulations of survey results.

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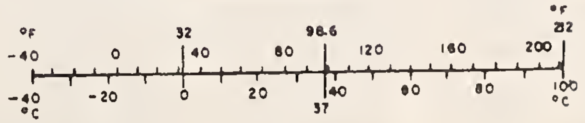
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



PREFACE

This report describes the conduct of and the impacts resulting from the implementation of a family of demand-responsive transit services and several related innovations in Greece and Irondequoit, New York, two suburbs of Rochester. The report covers the time period beginning with the implementation of PERT (for Personal Transit) services in August 1973 through July 1977. The initial Greece project did not become a federally-funded demonstration until after many of the innovations had begun. Nevertheless, this pre-demonstration period has been evaluated to the extent that data were available.

The demonstration ended in October 1977; however, the Rochester-Genesee Regional Transportation Authority prepared a request for additional demonstration funding so that additional innovations could be demonstrated in its quest to increase the coverage of transit service at a cost that could be borne in the long run. Specifically, the provision of service through contract with the private sector and modifications of union work rules and job categories were proposed for the extended demonstration. This application was approved by UMTA in December 1977, and PERT services continued to operate under a new demonstration grant. Additional PERT services also began in July 1978.

The demonstration services were operated by the Regional Transit Service, Inc. (RTS), an operating subsidiary of the Rochester-Genesee Regional Transportation Authority (RGRTA). Management assistance to RTS and RGRTA was provided by the Department of Civil Engineering of the Massachusetts Institute of Technology (MIT). Demonstration funding was provided by the Urban Mass Transportation Administration (UMTA) under its Service and Methods Demonstration (SMD) Program (Grant No. NY-06-0048). The SMD Program evaluations are conducted for UMTA by the Transportation Systems Center (TSC) of the U.S. Department of Transportation. The Rochester evaluation was conducted by SYSTAN, Inc. for TSC under Contract No. DOT-TSC-1084.

Mark Abkowitz and Joseph Sturm of the TSC staff, as well as Jim Bautz and Paul Fish of UMTA, were responsible for the evaluation and review of SYSTAN's work. The evaluation was also aided by numerous members of the staffs of the RGRTA, RTS, and MIT, who collected and provided data to SYSTAN for analysis. The report authors were assisted by Debra Newman, Jan Glick, Robert Berry, Andrew Canfield, Robert Bullemer, Carolyn Crow and Richard Morris of the SYSTAN staff. Carole Parker was responsible for production of the report.

GUIDE FOR THE READER

This report consists of an Executive Summary, ten chapters, and twenty appendices; it has been organized into three volumes.

The first volume contains an Executive Summary of the most significant demonstration findings. It should be read with Section 1.5, which summarizes the implications of the Rochester experience for other transit organizations. The first volume also contains Chapter 1, a summary of the entire report. This chapter outlines the major demonstration objectives, services and results, directing the reader to the appropriate sections within the text for more detailed analysis.

Volume Two consists of nine chapters. Chapter 2 introduces the demonstration project, Chapter 3 describes the project site and major exogenous events that affected the outcome of the demonstration, and Chapter 4 describes PERT'S innovations, activities, and implementation processes. Each of these chapters covers both Greece and Irondequoit services.

Because of the different transit services offered at various times within Greece and Irondequoit, the evaluation report format diverges to discuss and analyze these results with each service separately; Chapters 5 through 7 focus on Greece services, and Chapters 8 through 10 similarly evaluate PERT operations in Irondequoit. Chapter 5 deals with the changes in the level of service provided to users as a function of the supply and demand levels that resulted from the Greece innovations. The impacts of the Greece demonstration on demand levels are described in Chapter 6, and Chapter 7 describes impacts on system productivity and system economics in Greece. Chapter 8 (Level of Service), 9 (Demand), and 10 (Productivities and Economics) similarly concentrate on PERT activities in Irondequoit. Chapter 5, 6 and 7 generally contain more background material which has been omitted from the Irondequoit analysis. These more detailed sections are therefore referenced throughout the final three chapters.

Volume Three contains the appendices, including a glossary, copies of measurement instruments, and tabulations of survey results.

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EXECUTIVE SUMMARY

The Rochester Integrated Transit program involved a six-year search for a cost-effective combination of paratransit and conventional transit services to extend transit coverage in suburban areas. New services offered during the course of the program with small buses included door-to-door dial-a-ride, route deviation, point deviation, shuttle, subscription loop routes, and group trips and other special services for the elderly and handicapped. The many services and service changes tested provide a wealth of information for other cities considering the use of paratransit services to complement their fixed-route services.

The extended coverage generated demand levels comparable to those experienced by other demand-responsive systems. Although many of the riders were transit-dependent, a variety of users had acces to an automobile or other form of transportation. Many of the transit-dependent riders took advantage of the services to make trips they otherwise would not have made. As vehicle reliability problems caused service quality to decline, these transit-dependent riders continued to use the service; those who used the services by choice did not, resulting in a higher proportion of transit-dependent users. The total of new trips generally balanced the diversion from automobile use, resulting in a small change in vehicle-miles traveled within the service areas.

The services provided in the suburb of Greece, where little fixed-route service was available, evolved from many-to-many, door-to-door service to combinations of fixed- and flexible-route services. The new services were better tailored to meet demand, and had the potential for higher productivities. The demand patterns revealed by the many-to-many trips provided the information used in redesigning the services, a use that may be made of door-to-door services in other areas.

In the Irondequoit service area, hybrid fixed and flexible routes were initially implemented to replace fixed routes during the off-peak period. The fixed-route services were eventually restored, and DAB service was also retained to complement them. In general, the use of demand-responsive services as a cost-effective substitute for fixed routes was not well received by residents of either service area, and seems to have resulted in reduced transit use.

Several special services for the elderly and handicapped were very successful. Weekly group trip services were provided between elderly housing areas and such activity centers as shopping centers and daycare facilities. In some cases, merchants helped to offset the cost of these services and no fares were charged. These services generally had high load factors, and consequently cost relatively less per passenger.

In addition, a 24-hour advance reservation door-to-door service for the handicapped carried persons to major activity centers throughout the metropolitan area. Although the area served was large, per-passenger costs were relatively low because trips were aggregated to conform to a preestablished bus tour pattern.

Service levels (as measured by such factors as wait time, ride time, and reliability) were comparable to those of other cities offering demand-responsive services. They were not high enough, however, to attract the number of riders anticipated during PERT planning. Therefore, the costs per ride and the required subsidies caused Transit Authority decisionmakers to consider termination of the new services in order to cope with the financial austerity facing both the Transit Authority and the State of New York itself.

Offering new paratransit services through a traditional transit organization strained the operating organization, as the priorities of the Transit Authority and the operating subsidiary differed. This problem may have constrained the effectiveness of the new services. For example, winter-related reliability problems with some of the small buses were an endemic problem that could have been solved if priorities were different.

A computerized dispatching procedure was employed to perform passenger assignment and vehicle dispatching of the dial-a-ride service. This worked well after a period of adjustment and software modifications. Demand levels were not sufficiently high, however, and the number of vehicles involved discouraged testing of the computerized methodology in the large system environment where it is theoretically superior to manual dispatching.

The implications of these findings for other cities considering paratransit are summarized in Section 1.5 of the following chapter. This section may be read to complete the Executive Summary.

APPENDIX A.1

GLOSSARY

GLOSSARY

Access time:	Time it takes for a customer to move from the point of a trip start to a fixed-route bus stop, usually by walking.
Advance request:	Dial-A-Bus service which is requested for a future time.
Algorithm:	A set of rules used in mathematical computations.
Arrival time:	Time at which a customer arrives at his destination (either directly by PERT or after walking from a bus stop).
Assessed wait time:	In travel time calculations for demand-responsive transportation, the value used to represent wait time.
Attitudinal survey:	A survey of users of transportation facilities to try to identify psychological factors associated with patronage of transportation services.
Boarding time:	Time duration in which bus is not moving so that passenger can board vehicle or package can be loaded onto vehicle (disembarking and unloading time also considered).
Call-in-Time:	Time at which telephone request for service is acknowledged at control center.
Cancellation:	Incident in which a customer requesting service calls up and cancels his request prior to the bus arriving.
Checkpoint service:	Transit service in which passengers are picked up or dropped off at specific locations rather than at any point in the service area.
Communication time:	Time between when a passenger is dropped off or picked up and when driver receives his instructions as to where to next proceed, during which time the bus is not moving.
Computerized dispatching:	The procedure by which demand-responsive transit customers are assigned to vehicles and vehicles are scheduled by a computer using a predetermined algorithm.
Convenience:	The degree of ease and comfort perceived by transit users in a transit service.
Coverage:	A general SMD objective which refers to the scope of transit service across space and time.

Daily demand:	The total number of requests for service per day or ridership per day.
Data element:	An item of information required for the evaluation of an innovation.
Demand density:	The number of requests for service per unit area, typically per square mile or per square mile per hour.
Demand-responsive transportation:	Generic term for range of public transportation services characterized by the flexible routing and scheduling of relatively small vehicles to provide shared-occupancy, personalized transportation on demand for a modest fare, also called "flexible route" service.
Dial-A-Bus:	A form of door-to-door demand-responsive transportation in which users telephone a control room for service and a bus is then dispatched to pick them up and deliver them to their destinations.
Down time:	The amount of time that a piece of equipment is inoperative due to a breakdown (also called out-of-service time).
Dynamic routing:	Process of constantly modifying vehicle routes to accommodate service requests received since vehicle commenced operations, as opposed to predetermined route assigned to vehicle.
Egress time:	The time spent by a customer moving from the point of disembarkation from the vehicle to a final destination, usually by walking.
Error-Type I, alpha:	The probability of declaring two statistics to be from different populations when they are, in fact, from the same population.
Error-Type II, beta:	The probability of declaring two statistics to be from the same population when they are, in fact, from different populations.
Evaluation contractor:	The organization contracted by the Transportation Systems Center to conduct the evaluation of the demonstration (SYSTAN, Inc.).
Experimental design:	The formal evaluation framework that relates objectives to impacts and provides a methodology for measuring these impacts.
Fare elasticity:	The percentage change in ridership divided by the percentage change in fares.

Feeder service:	Local transportation service which connects with another, usually express or long distance, transit service.
Few-to-many:	Reverse operation of many-to-few service.
Fixed-route service:	Transit service in which a transit vehicle operates exclusively along a predesignated route.
Grant recipient:	The organization funded by UMTA to implement a transit project under the SMD program.
Hardware:	The various pieces of equipment necessary for operation: radios, vehicles, computers, etc.
Immediate requests:	Dial-A-Bus service that is requested as soon as possible.
Level of Service:	A variety of measures meant to denote the service quality provided to customers, but most often in terms of total travel time or a specific component of total travel time.
Level of Service ratio:	The ratio of the time required to make a trip by transit and the time required to make the same trip by auto.
Lift operation time:	The time for a driver to load or unload a passenger in a wheelchair, from when the driver leaves his seat until when he returns.
Manual dispatching:	The condition in which the assignment of demand-responsive transit customers to vehicles and the scheduling of vehicles is done by an individual known as a dispatcher.
Many-to-few:	Refers to demand-responsive transportation service in which passengers are collected from multiple locations (origins) within the service area, for transportation to a few pre-selected destinations, typically activity centers or transfer points.
Many-to-many:	Refers to demand-responsive transportation service in which passengers are collected from multiple locations (origins) and transported to their individual destinations; generally, service offered between any combination of origin-destination points in the service area.
Many-to-one:	Refers to demand responsive transportation service in which passengers are collected from multiple locations (origins) within the service area, for transportation to a common destination such as a transit terminal; also called "gather."
Measurement instrument:	A source of information or a means by which data may be obtained (e.g., a survey).

Modal share:	The proportion of travelers who travel by various modes. The sum total of mode shares for all modes equals 1.
Mode:	One of several possible means of urban passenger transport (e.g., automobile driver, automobile passenger, fixed-route transit, PERT, walking).
Multiple-stop dispatching:	Vehicle dispatching in which the driver is assigned a series of stops or a "tour" which must be completed before the next series is assigned.
No-show:	Incidents in which a person requesting PERT service does not meet the bus when it arrives at the designated pick-up point.
On-board survey:	A survey of transit users conducted on the vehicle during regular revenue service.
One-to-many:	Reverse of many-to-one.
Patron approach time:	The time that a bus waits for a passenger after arriving at the designated pick-up point.
Peak period demand:	Demand occurring during the morning and evening hours when demand is greatest, usually 7:00-9:00 A.M. and 4:00-6:00 P.M.
Pick-up deviation:	The time difference between the predicted or promised pick-up time and the actual pick-up time. Sometimes called "lateness" which is actually a misnomer because "earliness" is also possible.
Pick-up time:	The time at which a customer boards a PERT vehicle.
Point deviation:	A demand-responsive system which makes regularly scheduled stops at designated checkpoints but is free to provide door-to-door service between checkpoints (see route deviation).
Predicted or promised pick-up time:	The pick-up time that the control center informs a customer to expect when requesting service.
Predicted or promised wait time:	The wait time that the control center informs a customer to expect when requesting service.
Productivity:	Several measures meant to indicate the degree of efficiency with which service is provided.
Punctuality:	The mean and variability of pick-up deviation.

Reliability:	An SMD objective relating to the variability in predicted and actual waiting times, punctuality and arrival times; also employed in its common meaning of "dependability" when referring to attitudes on transit.
Ride time:	The time spent in the transit vehicle between boarding and disembarking.
Route deviation:	A demand-responsive transportation service pattern in which a normally fixed-route bus will leave the route upon request to serve patrons not on the fixed route. (See point deviation.)
Route rationalization:	The use of fixed-route or demand-responsive transit service to provide transit service depending upon which service can most effectively operate under the given demand conditions.
Service & Methods Demonstration (SMD) Program:	A program established by UMTA in which transit innovations are developed, demonstrated and evaluated for their potential in providing improved transit service.
Service quality:	See "level of service."
Shoppers' specials:	A PERT special service in which elderly persons are transported to and from shopping centers each week or every other week.
Single-stop dispatching:	Operating procedure whereby driver receives instructions for the next route segment at each assigned stop.
SMART:	Acronym for the SYSTAN Macroanalytic Regional Transportation Model, a model developed to test the applicability of different transportation modes in integrated regional transit systems.
Software:	Usually the computer-programmed procedures for service operations. Sometimes includes dispatchers' guidelines, training and orientation manuals, etc.
Special services:	PERT services that are provided on a non-daily basis to special groups.
State (of a system):	The levels of variables that characterize a given system at a given time; the levels may be defined statically or within a patterned flux.
Steady-state:	The state at which a system stabilizes following an external influence.

Subscription bus service:	A service provided by advance reservations of the same trip for a long period of time (typically A.M. and P.M. work or school trips).
System response time:	Time duration between an immediate call for DAB service and pick-up; sometimes called "wait time."
Telephone service time:	The elapsed time spent by an order processor in processing a service request, including the time the customer is placed on "hold" during the conversation.
Telephone hold time:	The time that a customer must wait before an order processor can begin processing the service request upon calling. This includes the time that the phone is ringing and the time that the customer is placed on "hold."
Third-party financing:	When the cost of transit services is partially offset by direct funds from someone other than the user, the transit authority, or government agencies.
Tour:	The route plan and schedule for a vehicle to follow in serving a specified set of passenger requests.
Total travel time:	The total time spent in moving from origin to destination for fixed-route services, = access time + wait time + ride time + (transfer time + ride time if transfer required) + egress time.
Transfer coordination:	The process of providing consistently short transfer times in a pleasant environment.
Transfer (or transfer waiting) time:	The time between disembarking from a bus and board another bus in order to continue the same trip; sometimes includes the time on the second bus prior to its leaving.
Transit-dependent groups:	Groups that particularly rely upon transit for transportation because of the unavailability of an automobile or other means of transportation (e.g., the handicapped, the elderly, the young, the poor).
Trip:	One or more persons traveling from the same origin to the same destination.
Vehicle arrival time:	See "pick-up time."
Vehicle dwell time:	The time that a bus is stopped while picking up or discharging a passenger.
Vehicle fleet or fleet size:	The number of vehicles dedicated to transportation service in one service area.

Vehicle productivity:	Specific productivity measures which are most commonly used in transit operational analysis, especially passengers/vehicle-hour.
Waiting (or wait) time:	The time spent waiting for a transit vehicle to arrive, whether at a bus stop or, in the case of demand-responsive transit, after calling for service; for demand-responsive transit, is sometimes defined as pick-up time minus call-in time when service is requested immediately (system response time).

APPENDIX A.2

JUNE 1975 DIAL-A-BUS ON-BOARD SURVEY (GREECE)

DO NOT WRITE IN THIS SPACE	Survey # ______ Interviewer ______ Date ______	Vehicle PT- ______ Time On ______ Time Off ______

1. Where did you board this PERT Dial-a-Bus?

☐ Dewey & Ridge ☐ Lake & Ridge ☐ Some Other Location

(IF DEWEY & RIDGE OR LAKE & RIDGE, PLEASE ANSWER QUESTION 2 AND ALL QUESTIONS THAT APPLY FROM 3 - 11 BEFORE ANSWERING QUESTION 16. QUESTIONS 12 - 15 WILL NOT APPLY.)

(IF "SOME OTHER LOCATION," QUESTIONS 2 - 11 WILL NOT APPLY. PLEASE START HERE AT QUESTION 12.)

2. Did the trip you're on now originate at Dewey & Ridge (or Lake & Ridge) or were you using this location as a transfer point?

☐ Originated there (SKIP TO 7)
☐ Used as transfer point (CONTINUE)

3. Where did this trip you're on now actually begin what was the address or nearest street intersection?

____

4. How did you get from the location where this trip actually began to Dewey & Ridge (or Lake & Ridge)?

☐ RTS Bus (CONTINUE)
☐ Private automobile (driver) (SKIP TO 7)
☐ Private automobile (passenger) (SKIP TO 7)
☐ Walk (SKIP TO 7)
☐ Other (write in) ______________ (SKIP TO 7)

5. Which route was this?

☐ #1-Lake ☐ #10-Dewey ☐ #14-Ridge ☐ #15-Latta

6. Did you request the bus driver to arrange for this PERT Dial-a-Bus to pick you up?

☐ Yes ☐ No

7. About how many minutes did you wait at Dewey & Ridge (or Lake & Ridge) for this PERT Dial-a-Bus to pick you up?

______

8. Do you use PERT Dial-a-Bus to pick you up at Dewey & Ridge (or Lake & Ridge) at least twice a month?

☐ Yes (CONTINUE) ☐ No (SKIP TO 10)

9. About how many minutes do you usually have to wait at this location for the PERT Dial-a-Bus to arrive?

______

10. Do you use PERT Dial-a-Bus to drop you off at Dewey & Ridge (or Lake & Ridge) as a transfer point at least twice a month?

☐ Yes (ANSWER 11 AND SKIP TO 16)
☐ No (SKIP TO 16)

11. About how many minutes do you usually have to wait at this location for the RTS bus to leave?

______

12. Where, specifically, did you board this PERT Dial-a-Bus - what was the address or nearest street intersection?

____

____

13. In arranging for this PERT Dial-a-Bus trip, did you telephone for immediate service or had you telephoned earlier to make advance arrangements?

☐ Immediate Service (ANSWER 14 AND SKIP TO 15)

☐ Advance Arrangements (SKIP TO 15)

14. How many minutes were you told you would have to wait?

______

How many minutes did you have to wait?

______

15. Was the bus early, on time, or late?

☐ Early
☐ On Time
☐ Late

(IF EARLY OR LATE)
How many minutes? ______

16. As far as this trip is concerned, where are you going?

☐ work
☐ school
☐ other (write in) ______________________________
☐ store
☐ doctor's office
☐ theatre
☐ home

17. Where are you coming from?

☐ work
☐ school
☐ other (write in) ______________________________
☐ store
☐ doctor's office
☐ theatre
☐ home

18. Would you be making this trip today if PERT Dial-a-Bus were not available?

☐ Yes (CONTINUE) ☐ No (SKIP TO 21)

19. How would you have made this trip?

☐ RTS Bus (CONTINUE)
☐ Private automobile (driver) (SKIP TO 21)
☐ Private automobile (passenger) (SKIP TO 21)
☐ Walk ☐ Other (write in) ______________ (SKIP TO 21)

20. Which route would you have used?

☐ #1-Lake ☐ #10-Dewey ☐ #14-Ridge ☐ #15-Latta

21. Are you using PERT Dial-a-Bus both going to and coming from your destination today?

☐ Yes (SKIP TO 24) ☐ No (CONTINUE)

22. What other method of transportation was or will be used?

☐ RTS Bus (CONTINUE)
☐ Private automobile (driver) (SKIP TO 24)
☐ Private automobile (passenger) (SKIP TO 24)
☐ Walk ☐ Other (write in) ________________ (SKIP TO 24)

23. Which route was or will be used?

☐ #1-Lake ☐ #10-Dewey ☐ #14-Ridge ☐ #15-Latta

24. Is this your first use of PERT Dial-a-Bus?

☐ Yes (SKIP TO 27) ☐ No (CONTINUE)

25. When did you first use PERT Dial-a-Bus? (Month) ____________ (Year) __________

26. Considering a "round-trip" as 2 trips, approximately how many trips do you take per week or per month on PERT Dial-a-Bus?

_____ trips per ☐ week or ☐ month

27. Approximately how many trips do you take per week or per month on each of the following RTS fixed-routes?

Route 1 (Lake) ____ trips per ☐ week or ☐ month
Route 10 (Dewey) ____ trips per ☐ week or ☐ month
Route 14 (Ridge) ____ trips per ☐ week or ☐ month
Route 15 (Latta) ____ trips per ☐ week or ☐ month

28. How would you rate PERT Dial-a-Bus as to each of the following?

	Very Good	Good	Fair	Poor	Very Poor
The promptness with which you are picked up	☐	☐	☐	☐	☐
The speed with which you reach your destination ..	☐	☐	☐	☐	☐
The comfort	☐	☐	☐	☐	☐
The safety	☐	☐	☐	☐	☐
The cost	☐	☐	☐	☐	☐

29. How did you first learn about PERT Dial-a-Bus? ______________________________

____

30. How many automobiles are owned or operated by members of your household? __________

31. Was there an automobile available that could have been used for this trip?

☐ Yes ☐ No

32. Do you have a driver's license at the present time? ☐ Yes ☐ No

NOTE: WE DO NOT WANT YOU TO SIGN YOUR NAME TO THIS FORM, BUT WE DO NEED THE FOLLOWING INFORMATION ABOUT YOU FOR TABULATION PURPOSES.

33. Your age: _____

34. Which of the following best describes your educational background? (CHECK ONE ONLY)

☐ Did not attend high school ☐ Attended college
☐ Attended high school ☐ Graduated from college
☐ Graduated from high school ☐ Did graduate work

35. In "round figures," what was the total income of all the members of your household in 1974?

$____,000

36. Your sex: ☐ Male ☐ Female

37. What are your suggestions for ways in which the PERT Dial-a-Bus service can be improved?

____
____
____
____
____
____
____
____
____

Results of Greece On-Board Survey of June 6-7, 1975

Question	Variable	Response	Percent	
	Day of Week (n=509)	Friday	61.5	
		Saturday	38.5	
			100.0	
User Characteristics:			Friday (n=299)	Saturday (n=184)
36.	Sex (χ^2*=.004)	Male	28.8	16.8
		Female	71.2	83.2
			100.0	100.0
			(n=261)	(n=168)
33.	Age (χ^2:N/A)**	Under 15	4.6	19.6
		15-24	37.2	32.3
		25-44	28.0	22.9
		45-64	23.0	17.2
		Over 65	7.3	8.0
			100.0	100.0
34.	Educational Level (χ^2=.004)		(n= 270)	(n= 166)
		No High School	7.8	12.0
		Some High School	25.9	41.0
		High School Graduate	39.3	30.1
		Some College	16.7	9.6
		College Graduate	8.1	6.6
		Graduate School	2.2	0.6
			100.0	100.0
			(n=289)	(n=176)
30.	Number of Cars in Household (χ^2=.07)	0	20.1	28.4
		1	44.6	36.4
		2	22.5	25.6
		3 or more	12.8	9.7
			100.0	100.0
		Mean Number of Cars	1.35	1.20
			(n=289)	(n=176)
32.	License (χ^2<.001)	Yes	42.9	22.2
		No	57.1	77.8
			100.0	100.0

*χ^2 denotes the chi-square significance level, or the probability of different responses between Friday and Saturday based on chance; generally considered significant if less than .05.

**N/A denotes information was not available.

			Friday	Saturday
			(n=312)	(n=188)
26.	Frequency of DAB use $(x^2 < .0001)$	Daily	36.5	19.7
		2-3 times/week	22.4	16.0
		Once/week	11.9	19.1
		1-2 times/month	23.1	34.0
		First trip	6.1	11.2
			100.0	100.0
			(n=312)	(n=188)
25.	First DAB Use $(x^2 = .10)$	This Month	17.3	21.3
		1-6 months ago	25.0	22.3
		6 months-1 year ago	30.8	22.3
		Over 1 year ago	26.9	34.0
			100.0	100.0
			(n=157)	(n=75)
35.	Income $(x^2 = .56)$	$5,000 and under	14.6	14.7
		$6,000-$10,000	19.1	22.7
		$11,000-$15,000	23.6	16.0
		$16,000-$20,000	21.0	28.0
		Over $20,000	21.7	18.7
			100.0	100.0

B) Trip Characteristics:

			Friday	Saturday
			(n=243)	(n=150)
15.	Type of request $(\chi^2=.0008)$	Immediate	56.0	73.3
		Advance	44.0	26.7
			100.0	100.0
			(n=346)	(n=203)
16,17	Purpose $(\chi^2<.0001)$ (non-home based trips counted twice)	Work	40.8	19.7
		School	7.8	0.0
		Medical	4.6	3.9
		Shopping	27.2	55.7
		Other	19.7	20.7
			100.0	100.0
			(n=312)	(n=187)
1.	Boarding Site $(\chi^2=.16)$	Dewey & Ridge	17.0	12.3
		Lake & Ridge	4.8	8.0
		Other	78.2	79.7
			100.0	100.0
			(n=301)	(n=184)
21.	DAB Round Trip $(\chi^2=.04)$	Yes	46.8	57.1
		No	53.2	42.9
			100.0	100.0

			(n=166)	(n=79)
22.	Mode for non-DAB leg of trip $(\chi^2=.09)$	RTS	24.7	16.5
		drive	13.3	7.6
		be driven	45.2	64.6
		walk	13.3	8.9
		other	3.6	2.5
			100.0	100.0
			(n=39)	(n=13)
23.	RTS Route for non-DAB leg of trip $(\chi^2=.05)$	#1	10.3	30.8
		#10	43.6	61.5
		#14	15.4	7.7
		#15	30.8	0.0
			100.0	100.0
			(n=291)	(n=171)
51.	Auto Availability $(\chi^2=.39)$	Yes	21.0	24.9
		No	79.0	75.1
			100.0	100.0
			(n=305)	(n=191)
18-19	Alternate Mode (χ^2:N/A)	No Trip	32.5	47.6
		RTS	22.0	10.5
		Drive	12.8	8.9
		Be Driven	15.1	22.0
		Walk	12.5	7.9
		Other	5.3	3.1
			100.0	100.0
			(n=65)	(n=24)
20.	Alternate Mode RTS Route $(\chi^2=.18)$	#1	29.2	8.3
		#10	33.8	41.7
		#14	23.1	37.5
		#15	13.8	12.5
			100.0	100.0

3.1) Trip Characteristics for Dewey and Ridge and Lake and Ridge Boarders:

			Friday & Saturday
			(n=107)
2.	Transfer	Yes	71.0
		No	29.0
			100.0
			(n=72)
5.	Access (RTS) route (transfers only)	#1	16.7
		#10	76.4
		#14	6.9
		#15	0.0
			100.0

7.	Mean perceived wait time for DAB at D&R or L&R		(n=104) $\bar{x}$=11.21 minutes (σ=12.19 minutes)
8.	Transfer frequency (to DAB)		(n=105)
		At least twice/month	75.2
		Less	24.8
			100.0
9.	Perceived usual transfer wait time for DAB		(n=75) $\bar{x}$=14.36 minutes (σ=10.41 minutes)
10.	Transfer frequency to RTS		(n=106)
		At least twice/month	46.2
		Less	53.8
			100.0
11.	Perceived usual transfer wait time for RTS		(n=42) $\bar{x}$=15.45 minutes (σ=15.78 minutes)

C) Attitude of Users:

29.	First heard of DAB by		(n=442)
		Mail	14.9
		Newspaper ad	36.4
		TV/Radio	12.9
		RTS	4.7
		Word of Mouth	20.1
		Other	11.0
			100.0

28. Perceptions of Various Service Characteristics (Adjusted Percentages Listed)

Characteristic	Very Good (1)	Good (2)	Fair (3)	Poor (4)	Very Poor (5)	Mean Rating ($\bar{x}$)
Safety (n=475)	45.9	44.6	7.6	1.3	.6	1.66
Comfort (n=478)	46.0	41.2	11.1	1.3	.4	1.69
Speed (n=464)	30.4	45.7	18.3	3.0	2.6	2.02
Cost (n=474)	30.8	37.1	24.7	4.2	3.2	2.12
Promptness (n=483)	29.4	38.9	20.5	8.1	2.9	2.16

D) Perceptions of Service Quality:

	Immediate Requests		
14(a)	Perceived Predicted Wait Time		(n=233) $\bar{x}$=17.64 minutes (σ=6.63 minutes)
14(b)	Perceived Wait Time		(n=231) $\bar{x}$=20.47 minutes (σ=11.31 minutes)
13(b)	Perceived Lateness		(n=246) $\bar{x}$=2.52 minutes (σ=8.82 minutes)
	Advance Requests		(n=145)
15(a)	Percent Arriving	Early	10.3
		On Time	53.1
		Late	36.6
15(b)	Perceived Lateness		(n=147) $\bar{x}$=5.12 minutes (σ=11.59 minutes)
15(b)	Perceived Deviation from Expected Arrival Time (absolute value)		(n=65) $\bar{x}$=14.97 minutes (σ=11.79 minutes)

APPENDIX A.3

JUNE 1976 DIAL-A-BUS ON-BOARD SURVEY (GREECE)

DO NOT WRITE IN THIS SPACE	PASS. ID # __________ INTERVIEWER __________ DATE __________	PT # __________ TIME ON __________ a TIME OFF __________ p

1. Where did you board this PERT Dial-a-Bus?
   1. ( ) Dewey and Ridge
   2. ( ) Clinton Loop
   3. ( ) Some other location?
      What address? ____________________

FOR DEWEY AND RIDGE AND CLINTON LOOP BOARDERS

1a. How did you get to this PERT Dial-a-Bus?
   1. ( ) RTS Bus, what Route? __________
   2. ( ) Drove myself
   3. ( ) Driven by someone
   4. ( ) Walked
   5. ( ) Taxi
   6. ( ) Other, how? ______________

1b. How did you contact PERT Dial-a-Bus to book a trip?
   1. ( ) Telephoned from downtown
   2. ( ) Telephoned from home
   3. ( ) Telephoned from transfer point
   4. ( ) Notified RTS Bus Driver
   5. ( ) Other, how? ______________

1c. About how many minutes did you wait for PERT Dial-a-Bus to pick you up?
   __________minutes

FOR OTHER BOARDERS

1d. In arranging for this PERT Dial-a-Bus trip, did you telephone for service as soon as possible, or did you telephone earlier and request service for a particular time?
   1. ( ) As soon as possible
      How long were you told you would have to wait? __________minutes
      How long did you actually wait? __________minutes
   2. ( ) Particular time.
      Was the bus:
      1. ( ) Early
      2. ( ) On Time
      3. ( ) Late
      By how many minutes was it late or early? ________

---

2. Where are you going on this trip?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or dental appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, where? ____________________

3. Where are you coming from?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or Dental Appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, Where? ____________________

4. How many automobiles are owned or operated by members of your household? ________cars.

5. Do you have a valid driver's license?
   1. ( ) Yes
   2. ( ) No

6. Was there an automobile available for you to drive, or be driven in, for this trip?
   1. ( ) Yes, without inconvenience to others
   2. ( ) Yes, with inconvenience to others
   3. ( ) No

7. Your age:
   1. ( ) Under 20
   2. ( ) 20-44
   3. ( ) 45-64
   4. ( ) 65 or over

8. Are you:
   1. ( ) Male
   2. ( ) Female

9. Are you a:
   1. ( ) Student
   2. ( ) Homemaker
   3. ( ) Retiree
   4. ( ) Employed
   5. ( ) Self-employed
   6. ( ) Other, what? ____________________

10. If PERT Dial-a-Bus were not available, how would you have made this trip?
   1. ( ) Could not have made this trip
   2. ( ) RTS bus, what route? ____________________
   3. ( ) Drove myself
   4. ( ) Driven by someone
   5. ( ) Walk
   6. ( ) Taxi
   7. ( ) Other, how? ____________________

11. How do you do most of your local travelling?
   1. ( ) PERT Dial-a-Bus
   2. ( ) RTS Buses
   3. ( ) Drive myself
   4. ( ) Driven by someone
   5. ( ) Walk
   6. ( ) Taxi
   7. ( ) Other, how? ______________________________

12. Comparing PERT Dial-a-Bus to the kind of transportation you checked above in question 11, how would you rate PERT service in terms of:

	MUCH BETTER	SOMEWHAT BETTER	ABOUT THE SAME	SOMEWHAT WORSE	MUCH WORSE
A. Convenience to use	( )	( )	( )	( )	( )
B. Speed of reaching your destination	( )	( )	( )	( )	( )
C. Comfort	( )	( )	( )	( )	( )
D. Safety	( )	( )	( )	( )	( )
E. Cost	( )	( )	( )	( )	( )
F. Predictability of service from one day to the next	( )	( )	( )	( )	( )

13. There are 7 different kinds of small PERT buses, how does this one compare to the rest?
   1. ( ) The best kind
   2. ( ) Better than most
   3. ( ) Average
   4. ( ) Worse than most
   5. ( ) The worst kind

14. Are you using PERT Dial-a-Bus both going to and coming from your destination today?
   1. Yes
   2. ( ) No, what other method of transportation was, or will be, used for your trip in the other direction?
      1. ( ) Bus only, what route?
      2. ( ) Drove myself
      3. ( ) Driven by someone
      4. ( ) Walk
      5. ( ) Taxi
      6. ( ) Other, how? ______________________________

15. Are you travelling alone or with other people (including small children), this trip?
   1. ( ) Alone
   2. ( ) With other people, how many? ____________________

16. How often do you use PERT Dial-a-Bus?
   1. ( ) 3 to 6 days a week
   2. ( ) 1 to 2 days a week
   3. ( ) 1 to 3 days a month
   4. ( ) Less than once a month

17. How often do you use RTS buses?
   1. ( ) 3 to 6 days a week
   2. ( ) 1 to 2 days a week
   3. ( ) 1 to 3 days a month
   4. ( ) Less than once a month
   5. ( ) Never

18. When did you first ride PERT Dial-a-Bus?
   1. ( ) Today
   2. ( ) This month
   3. ( ) July or June
   4. ( ) April or May

19. How did you happen to ride PERT Dial-a-Bus for the first time? ______________________________

____

20. Where did you get most of your information on PERT?
   1. ( ) Information in the mail
   2. ( ) Newspaper advertisements
   3. ( ) Radio and TV
   4. ( ) Telephoning PERT
   5. ( ) From bus drivers
   6. ( ) At work
   7. ( ) From friends or family
   8. ( ) Other, how? ______________________________

Please use the additional space to give us whatever suggestions and comments you would like to add. We are especially interested in ways to improve service.

____

____

____

Your Name: ____

Results of Greece On-Board Survey of June 12 & 14, 1976

Question	Variable	Response	Percent
			(n=575)
	Day of Week	Monday	50.8
		Saturday	49.2
			100.0

A) User Characteristics:

Question	Variable	Response	Monday	Saturday
			(n=229)	(n=217)
3.	Sex (χ^2=.72)	Male	26.6	24.7
		Female	73.4	75.3
			100.0	100.0
			(n=228)	(n=222)
7.	Age (χ^2=.14)	Under 20	29.4	37.4
		20-44	39.9	30.2
		45-64	18.9	18.5
		65 or over	11.8	14.0
			100.0	100.0
			(n=224)	(n=220)
9.	Occupation (χ^2=.12)	Student	26.3	35.9
		Homemaker	18.8	12.3
		Retiree	12.5	14.5
		Employed	37.5	32.7
		Self-employed	2.7	1.4
		Unemployed	0.0	0.9
		Other	2.2	2.3
			100.0	100.0
			(n=207)	(n=215)
4.	Number of cars in household (χ^2=.17)	0	21.7	29.3
		1	47.9	40.9
		2	20.3	19.1
		3 or more	10.0	10.8
			100.0	100.0
		Mean number of cars	1.21	1.14
			(n=273)	(n=219)
5.	License (χ^2=.06)	Yes	44.8	35.3
		No	55.2	64.7
			100.0	100.0

			(n=202)	(n=192)
11.	Most Common Local Mode ($\chi^2=.25$)	DAB	17.3	19.3
		RTS	21.8	20.8
		Drive	21.3	13.0
		Be driven	28.2	28.6
		Walk	8.9	13.5
		Taxi	1.0	1.0
		Bicycle	1.5	3.6
			100.0	100.0
			(n=187)	(n=191)
16.	Frequency of DAB use ($\chi^2=.001$)	3-6 days/week	40.1	21.1
		1-2 days/week	24.6	32.1
		1-3 days/month	15.0	23.2
		Less than once/month	20.3	23.7
			100.0	100.0
			(n=170)	(n=187)
17.	Frequency of RTS use ($\chi^2=.81$)	3-6 days/week	27.6	28.9
		1-2 days/week	12.9	11.8
		1-3 days/month	14.7	10.7
		Less than once/month	18.8	19.8
		Never	25.9	28.9
			100.0	100.0
			(n=164)	(n=179)
18.	First DAB Use ($\chi^2=.87$)	Today	11.0	7.9
		This month	4.3	3.9
		1-6 months ago	15.3	16.9
		6 months-1 year ago	19.6	21.9
		Over 1 year ago	49.7	49.4
			100.0	100.0

B) Trip Characteristics:

			(n=218)	(n=201)
1(d)	Type of Request ($\chi^2=.0005$)	Immediate	53.2	70.1
		Advance	46.8	29.9
			100.0	100.0
			(n=313)	(n=309)
2, 3	Purpose ($\chi^2<.0001$) (non-home based trips counted twice)	Work	38.3	17.8
		School	10.2	1.0
		Medical	7.7	1.6
		Shopping	25.6	53.7
		Personal Visit	5.8	7.4
		Recreation	7.4	15.5
		Other	5.1	2.9
			100.0	100.0

			(n=290)	(n=280)
1.	Boarding Site (χ^2=.02)	Dewey & Ridge	21.4	21.1
		Lake & Ridge	1.4	5.7
		Other	77.2	73.2
			100.0	100.0
			(n=184)	(n=190)
14.	DAB Round Trip (χ^2=.05)	Yes	44.6	55.3
		No	55.4	44.7
			100.0	100.0
			(n=103)	(n=85)
14.2	Mode for non-DAB leg of trip (χ^2=.49)	RTS	15.5	14.3
		Drive	5.8	2.4
		Be driven	64.1	75.0
		Walk	5.8	4.8
		Taxi	3.9	2.4
		Other	4.9	1.2
			100.0	100.0
			(n=270)	(n=274)
15.	Group Size (χ^2=.001)	Alone	75.2	62.0
		2	17.4	26.3
		3	3.7	9.9
		4	3.3	1.8
		5	0.4	0.0
			100.0	100.0
		Mean group size	1.36	1.51
			(n=208)	(n=220)
6.	Auto Availability (χ^2=.78)	Yes	4.8	6.4
		Yes, but inconvenient	17.9	17.9
		No	77.3	75.7
			100.0	100.0
			(n=209)	(n=216)
10.	Alternate Mode (χ^2=.003)	No trip	21.5	36.6
		RTS	16.3	7.4
		Drive	5.3	4.2
		Be driven	28.7	26.9
		Walk	18.2	13.9
		Taxi	9.6	8.3
		Bicycle	0.0	2.3
		Other	0.5	0.5
			100.0	100.0
			(n=32)	(n=19)
10.	Alternate Mode RTS Route (χ^2=.90)	#1	25.0	35.3
		#10	40.6	35.3
		#14	15.6	11.8
		#15	18.8	17.6
			100.0	100.0

B-1) Trip Characteristics for Dewey and Ridge and Lake and Ridge Boarders:

			Saturday & Monday
			(n=128)
1(a)	Access mode	RTS	71.1
		Drive	3.1
		Was driven	6.3
		Walk	14.8
		Taxi	0.8
		Other	3.9
			100.0
			(n=90)
	Access (RTS) Route	#1	10.0
		#10	88.9
		#14	0.0
		#15	1.1
			100.0
			(n=126)
1(b)	Method of booking trip	Phoned from downtown	4.8
		Phoned from home	29.4
		Phoned from D&R	27.0
		Told RTS driver	36.5
		Other	2.4
			100.0
			(n=121)
1(c)	Mean Perceived Transfer Wait Time		$\bar{x}$=13.32 minutes (σ=13.19 minutes)

C) Attitudes of Users:

19.	Reason for first DAB use		(n=289)
		Needed to get somewhere	31.1
		No other way	18.7
		Recommendation	15.2
		Route rationalization	4.8
		Handicapped	2.4
		Curiosity	5.5
		Convenience	5.9
		Promotion	13.5
		Other	2.8
			100.0
			(n=355)
20.	Source of most PERT information	Mail	18.6
		Newspaper	13.5
		Radio/TV	5.1
		Calling PERT	16.9
		PERT bus drivers	8.2
		At work	2.8
		Friends/family	32.1
		Other	2.3
		RTS	0.6
			100.0

12. Comparison of DAB travel to most common local mode
(Adjusted Percentages Listed)

Characteristic	Much Better (1)	Somewhat Better (2)	Same (3)	Somewhat Worse (4)	Much Worse (5)	Mean Rating ($\bar{x}$)
Comfort (n=273)	40.3	19.4	31.9	7.0	1.5	2.10
Safety (n=264)	31.1	20.8	45.1	2.3	0.8	2.22
Convenience (n=289)	33.2	19.0	21.5	15.2	11.1	2.52
Speed (n=272)	19.9	14.7	27.9	25.4	12.1	2.95
Cost (n=257)	18.3	13.2	31.1	20.2	17.1	3.04
Predictability (n=249)	12.9	15.7	30.5	18.5	22.5	3.22

13. Comparison of DAB vehicles
(Adjusted Percentages Listed)

Vehicle	Best (1)	Better (2)	Average (3)	Worse (4)	Worst (5)	Mean Rating ($\bar{x}$)
GM (n=209)	30.1	37.8	30.1	1.4	0.5	2.04
Rek V (n=50)	16.0	34.0	48.0	2.0	-	2.36
Twin Coach (n=4)	0.0	50.0	50.0	-	-	2.50
FMC (n=46)	8.7	17.4	54.4	17.4	2.2	2.87
Ford Econoline (n=27)	3.7	22.2	51.9	22.2	-	2.93
Grumman (n=9)	-	11.1	44.4	11.1	33.3	3.44

D) Perceptions of Service Quality:

Immediate Requests	(n=221)
Perceived Predicted Wait Time	$\bar{x}$=19.63 minutes (σ=8.80 minutes)
	(n=240)
Perceived Wait Time	$\bar{x}$=20.93 minutes (σ=14.99 minutes)
	(n=219)
Perceived Lateness	$\bar{x}$=1.62 minutes (σ=13.52 minutes)
	(n=165)
Actual Wait Time	$\bar{x}$=20.01 minutes (σ=10.55 minutes)

Actual Lateness	(n=252) $\bar{x}=4.45$ minutes ($\sigma=15.27$ minutes)

Perceived Wait Time/Actual Wait Time = 1.05

Perceived Lateness/Actual Lateness = 0.56

Advance Requests		(n=161)
Percent Arriving	Early	16.8
	On time	46.0
	Late	37.3
Actual Lateness		(n=161) $\bar{x}=2.80$ minutes ($\sigma=10.33$ minutes)
Perceived Deviation from Expected Arrival Time (absolute value)		(n=162) $\bar{x}=8.30$ minutes ($\sigma=14.91$ minutes)

All Users	(n=572)
Actual Ride Time	$\bar{x}=17.41$ minutes ($\sigma=10.84$ minutes)

APPENDIX A.4

DECEMBER 1976 DIAL-A-BUS ON-BOARD SURVEY (GREECE)

DO NOT
WRITE IN
THIS SPACE

PASS. ID # ____________
INTERVIEWER ____________
DATE ____________

PT # ____________
TIME ON ____________ a
TIME OFF ____________ p

1. Where did you board this PERT Dial-a-Bus?
   1. ( ) Dewey and Ridge
   2. ( ) Clinton Loop
   3. ( ) Some other location?
      What address? ____________

FOR DEWEY AND RIDGE AND CLINTON
LOOP BOARDERS

1a. How did you get to this PERT Dial-a-Bus?
   1. ( ) RTS Bus, what Route? ________
   2. ( ) Drove myself
   3. ( ) Driven by someone
   4. ( ) Walked
   5. ( ) Taxi
   6. ( ) Other, how? ____________

1b. How did you contact PERT Dial-a-Bus to book a trip?
   1. ( ) Telephoned from downtown
   2. ( ) Telephoned from home
   3. ( ) Telephoned from transfer point
   4. ( ) Notified RTS Bus Driver
   5. ( ) Other, how? ____________

1c. About how many minutes did you wait for PERT Dial-a-Bus to pick you up?
   __________minutes

FOR OTHER BOARDERS

1d. In arranging for this PERT Dial-a-Bus trip, did you telephone for service as soon as possible, or did you telephone earlier and request service for a particular time?
   1. ( ) As soon as possible
      How long were you told you would have to wait? ________minutes
      How long did you actually wait? __________minutes
   2. ( ) Particular time.
      Was the bus:
      1. ( ) Early
      2. ( ) On Time
      3. ( ) Late
      By how many minutes was it late or early? ______

2. Where are you going on this trip?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or dental appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, where? ____________

3. Where are you coming from?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or Dental Appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, Where? ____________

4. How many automobiles are owned or operated by members of your household? ________cars.

5. Do you have a valid driver's license?
   1. ( ) Yes
   2. ( ) No

6. Was there an automobile available for you to drive, or be driven in, for this trip?
   1. ( ) Yes, without inconvenience to others
   2. ( ) Yes, with inconvenience to others
   3. ( ) No

7. Your age:
   1. ( ) Under 20
   2. ( ) 20-44
   3. ( ) 45-64
   4. ( ) 65 or over

8. Are you:
   1. ( ) Male
   2. ( ) Female

9. Are you a:
   1. ( ) Student
   2. ( ) Homemaker
   3. ( ) Retiree
   4. ( ) Employed
   5. ( ) Self-employed
   6. ( ) Other, what? ____________

10. If PERT Dial-a-Bus were not available, how would you have made this trip?
   1. ( ) Could not have made this trip
   2. ( ) RTS bus, what route? ____________
   3. ( ) Drove myself
   4. ( ) Driven by someone
   5. ( ) Walk
   6. ( ) Taxi
   7. ( ) Other, how? ____________

11. How do you do most of your local travelling?
1. ( ) PERT Dial-a-Bus
2. ( ) RTS Buses
3. ( ) Drive myself
4. ( ) Driven by someone
5. ( ) Walk
6. ( ) Taxi
7. ( ) Other, how? ______________________________

12. Comparing PERT Dial-a-Bus to the kind of transportation you checked above in question 11, how would you rate PERT service in terms of:

	MUCH BETTER	SOMEWHAT BETTER	ABOUT THE SAME	SOMEWHAT WORSE	MUCH WORSE
A. Convenience to use	( )	( )	( )	( )	( )
B. Speed of reaching your destination	( )	( )	( )	( )	( )
C. Comfort	( )	( )	( )	( )	( )
D. Safety	( )	( )	( )	( )	( )
E. Cost	( )	( )	( )	( )	( )
F. Predictability of service from one day to the next	( )	( )	( )	( )	( )

13. Would you prefer to pay the fare you just paid now, or a flat fare of $1.25(half fare for senior citizens)?

1. ( ) Yes, the current fare
2. ( ) No, a flat fare

14. Are you using PERT Dial-a-Bus both going to and coming from your destination today?
1. ( ) Yes
2. ( ) No, What other method of transportation was, or will be, used for your trip in the other direction?
    1. ( ) Bus only, what route?
    2. ( ) Drove myself
    3. ( ) Driven by someone
    4. ( ) Walk
    5. ( ) Taxi
    6. ( ) Other, how? ______________________________

15. Are you travelling alone or with other people (including small children), this trip?
1. ( ) Alone
2. ( ) With other people, how many? ________________

16. How often do you use PERT Dial-a-Bus?
1. ( ) 3 to 6 days a week
2. ( ) 1 to 2 days a week
3. ( ) 1 to 3 days a month
4. ( ) Less than once a month

17. How often do you use RTS buses?
1. ( ) 3 to 6 days a week
2. ( ) 1 to 2 days a week
3. ( ) 1 to 3 days a month
4. ( ) Less than once a month
5. ( ) Never

18. When did you first ride PERT Dial-a-Bus?
1. ( ) Today
2. ( ) This month
3. ( ) July or June
4. ( ) April or May

19. How did you happen to ride PERT Dial-a-Bus for the first time? ______________________

____

20. Where did you get most of your information on PERT?
1. ( ) Information in the mall
2. ( ) Newspaper advertisements
3. ( ) Radio and TV
4. ( ) Telephoning PERT
5. ( ) From bus drivers
6. ( ) At work
7. ( ) From friends or family
8. ( ) Other, how? ____________________

Please use the additional space to give us whatever suggestions and comments you would like to add. We are especially interested in ways to improve service.

____

____

____

Your Name: ____

Results of Greece On-Board Survey of December 1976

I. USER CHARACTERISTICS

	Percent
Sex	(n=136)
Male	17.7
Female	82.3
Age	(n=136)
Under 20	31.6
20-44	32.4
45-64	22.1
65 and Over	14.0
Occupation	(n=137)
Student	22.6
Employed	38.7
Self-Employed	0.7
Retired	13.1
Homemaker	22.6
Unemployed	0.7
Other	1.5
Licensed Drivers	(n=137)
Licensed	35.8
Not Licensed	64.2
Autos In Household	(n=132)
0	27.3
1	44.7
2	20.5
3	5.3
4	2.3

II. TRIP CHARACTERISTICS

Type of Trip	(n=102)
Immediate Request	61.8
Advance Request	38.2
Passengers In Party	(n=129)
1	74.4
2	14.7
3	8.5
4 or more	2.3
Mean:	1.43

II. TRIP CHARACTERISTICS (Continued)

	Percent
Place Boarded	(n=157)
Dewey and Ridge	19.8
Lake and Ridge	0.6
Other Location	79.6
Fare Paid	(n=156)
15-70¢	17.3
75¢	26.3
80¢-$1.20	16.7
$1.25	22.4
$1.30-$1.70	3.9
$1.75	7.1
Above $1.75	6.4
Mean:	$1.02
Access Mode (Transferring Passengers)	(n=26)
RTS Route 10	57.7
Driven	7.7
Walked	23.1
PERT	11.5
Place Request Booked (Transferring Passengers)	(n=28)
Downtown	3.6
Home	25.0
Dewey and Ridge	35.7
RTS	17.9
Other	17.9
Trip Purpose (Non-Home Based Trips Counted Twice)	(n=162)
Work	38.3
School	6.8
Medical	1.2
Shopping	30.9
Personal Visit	7.4
Recreation	9.3
Other	6.2
Round Trip by Dial-A-Bus	(n=124)
Yes	41.1
No	58.9

II. TRIP CHARACTERISTICS (Continued)

	Percent
Mode Used on Return Trip	(n=65)
RTS	18.5
Drive	7.7
Driven	63.1
Walk	4.6
Taxi	3.1
School Bus	1.5
Other	1.5
Availability of Auto for Trip	(n=136)
Not Available	78.7
Available, but inconvenient for others	17.6
Available and convenient	3.7
Alternate Mode for Trip	(n=134)
No Trip	30.6
RTS	10.4
Drive	4.5
Driven	29.1
Walk	13.4
Taxi	10.4
Other	1.5

III. TRAVEL CHARACTERISTICS

	Dial-A-Bus	RTS
Frequency of Transit Use	(n=124)	(n=117)
3-6 Days/Week	37.9	25.6
1-2 Days/Week	33.1	12.0
1-3 Days/Month	16.9	11.1
Less than once a month	12.1	18.8
Never	--	32.5

Major Mode Used for Local Travel	(n=128)
PERT	29.7
RTS	14.1
Drive	14.8
Driven	30.5
Walk	9.4
Taxi	1.6

III. TRAVEL CHARACTERISTICS (Continued)	Percent
First Use of Dial-A-Bus	(n=107)
Today	1.9
This Month	2.8
1-6 Months Ago	20.6
6-12 Months Ago	17.8
Over a Year Ago	57.0
Reason Dial-A-Bus First Used	(n=99)
Curious	3.0
Recommendation	26.3
No Car	5.1
Promotion	12.1
"To get somewhere"	41.4
Route Rationalization	7.1
To Transfer	4.0
Weather	1.0
Major Source of Information On Dial-A-Bus	(n=117)
Mail	35.9
Newspaper Advertisement	14.5
TV	3.4
Telephoning PERT	14.5
PERT Bus Drivers	7.7
At Work	2.6
Friends & Family	18.8
Other	2.6

IV. ATTITUDES TOWARD DIAL-A-BUS

Perception of Dial-A-Bus Compared to Major Mode Used for Local Travel

Attribute	(1) Much Better	(2) Somewhat Better	(3) Same	(4) Somewhat Worse	(5) Much Worse	Mean
Comfort (n=73)	34.2	23.3	34.2	6.8	1.4	2.18
Safety (n=73)	23.3	26.0	41.1	6.8	2.7	2.40
Convenience (n=79)	22.8	25.3	22.8	22.8	6.3	2.65
Speed (n=75)	22.7	13.3	20.0	36.0	8.0	2.93
Predictability (n=69)	11.6	11.6	24.6	31.9	20.3	3.38
Cost (n=69)	11.6	10.1	26.1	18.8	33.3	3.52

Fare System Preference	Percent (n=116)
Prefer zone fare system	69.0
Prefer flat fare	31.0

V. LEVEL OF SERVICE

	Sample Size	(Minutes) Mean	Standard Deviation
A. Immediate Requests			
Perceived Predicted Wait Time	52	24.9	13.8
Perceived Wait Time	52	23.1	15.7
Computer Recorded Wait Time	50	24.2	20.0
Perceived Pickup Deviation	46	2.9	12.0
Surveyor-Recorded Ride Time	60	15.0	10.7
Computer-Recorded Ride Time	48	19.3	19.3
B. Advance Requests			
Perceived Pickup Deviation	36	1.7	24.3
Surveyor-Recorded Ride Time	39	16.9	11.9
Computer-Recorded Ride Time	27	20.1	16.0
C. Transfer Requests			
Perceived Transfer Wait Time	28	21.3	24.1

APPENDIX A.5

COMPARISON OF FIVE ON-BOARD SURVEYS (GREECE)

TRENDS IN DAB USER AND TRIP CHARACTERISTICS

(Adjusted Percentages Listed)

Variable	Response	Service Area (1970 Census)	Wednesday Oct. 17 1973 (n=86)	Thursday Feb. 21 1974 (n=131)	Friday June 6 1975 (n=313)	Monday June 14 1976 (n=292)	Thursday Dec. 16 1976 (n=162)
Sex	Male	48.4	19.3	21.8	28.8	26.6	17.7
	Female	51.6	80.7	78.2	71.2	73.4	82.3
		100.0	100.0	100.0	100.0	100.0	100.0
Age	Under 18	34.5	13.3	23.8	26.0*	29.4[1]	31.6[1]
	18-64	57.8	47.0 27.7	46.8 18.9	46.9* 19.5*	39.9[2] 18.9	32.4[2] 22.1
	65 and over	7.7	12.0	10.7	7.6*	11.8	14.0
		100.0	100.0	100.0	100.0	100.0	100.0
Number of cars in household	0	5.5	15.4	17.1	20.1	21.7	27.3
	1	60.7	54.8	52.8	44.6	47.9	44.7
	2	30.2	29.8	30.1	22.5	20.3	20.5
	3 or more	3.6			12.8	10.0	7.6
		100.0	100.0	100.0	100.0	100.0	100.0
Driver's License	Yes	N/A	39.1	45.9	42.9	44.8	35.8
	No	N/A	60.9	54.1	57.1	55.2	64.2
			100.0	100.0	100.0	100.0	100.0
First DAB Use	This month	-	-	25.0	38.9 *	15.3	4.7
	1-6 months ago	-	-	75.0	23.9 *	15.3	20.6
	6 months-1 year ago	-	-	-	12.6 *	19.6	17.8
	Over a year ago	-	-	-	24.6 *	49.7	57.0
				100.0	100.0	100.0	100.0
Frequency of DAB Use (excluding first time riders)	Daily	-	28.9	24.6	17.3	64.7	71.0
	2-3 times/week	-	27.0	24.6	25.0		
	Once/week	-	24.3	26.1	30.8		
	2-3 times/month	-	19.8	24.6	26.9	35.3	29.0
			100.0	100.0	100.0	100.0	100.0
Purpose	Work	-	44.2	38.1	40.8	38.3	38.3
	School	-	2.9	3.4	7.8	10.2	6.8
	Medical	-	14.3	6.8	4.6	7.7	1.2
	Shopping	-	22.9	35.5	27.2	25.6	30.9
	Other	-	15.7	16.2	19.7	18.3	22.9
			100.0	100.0	100.0	100.0	100.0
DAB Round Trip	Yes	-	46.0	49.2	46.8	44.6	41.1
	No	-	54.0	50.8	53.2	55.4	58.9
			100.0	100.0	100.0	100.0	100.0

---

[1] Under 20 age group

[2] 20-44 age group

* Friday and Saturday results combined (n=459)

Mode for non-DAB leg of trip	RTS	-	8.6	15.7	24.7	15.5	18.5
	Drive	-	20.0	11.8	13.3	5.8	7.7
	Be driven	-	48.6	58.8	45.2	64.1	63,1
	Walk	-	17.1	5.9	13.3	5.8	4.6
	Taxi	-	5.7	3.9	-	3.9	3,1
	Other	-	0.0	3.9	3.6	4.9	3.0
			100.0	100.0	100.0	100.0	100.0
Alternate Mode	No trip	-	11.8	14.1	32.5	21.5	30.6
	RTS	-	25.9	25.0	22.0	16.3	10,4
	Drive		13.0	18.8	12.8	5.3	4,5
	Be driven		11.8	20.3	15.1	28.7	29,1
	Walk		17.5	13.3	12.5	18.2	13.4
	Taxi		16.5	6.3	-	9.6	10,4
	Other		3.5	2.3	5.3	0.5	1,5
			100.0	100.0	100.0	100.0	100,0
Auto Available for Trip	Yes	-	3.5	13.3	21.0	4.8	3,7
	Yes, but inconvenient	-	7.1	18.3		17.9	17,6
	No	-	89,4	68.3	79.0	77.3	78,7
			100.0	100.0	100.0	100.0	100.0

APPENDIX A.6

MAY 1976 TRANSFER POINT SURVEY (GREECE)

PERT dial-a-bus

288-3181

1372 EAST MAIN STREET, ROCHESTER, N.Y. 14609

This survey is being administered by PERT Dial-A-Bus with the intention of improving service. Please take the time to answer these few questions. All answers will remain strictly confidential.

If you have already completed this questionnaire today, do not fill it out again, but put an "X" in the box below.

Please return this form to the person distributing questionnaires. If you do not have the time to finish, he or she will provide you with a postage-free envelope so that you may mail it back. We are very grateful for your help.

☐ I have already filled out this form today.

---

1. Where did your trip begin? (Please enter street address and city)

   ____

2. What is the final destination of your trip? (Please enter street address and city)

   ____

3. Are you transferrring to(or from) a PERT bus on this trip?

   ____Yes (Go to 4)   ____No (answer question '3a')

   3a. How did you(or will you) get to(or from) Dewey & Ridge?

   ____walk ____drive ____be driven or picked up

   ____taxi ____other(specify)______________

4. For passengers waiting for PERT:
   How did you contact Dial-A-Bus to book a trip?

   ____phone from downtown ____notified RTS driver ____phoned from Dewey & Ridge

   ____other

5. How many minutes do you usually have to wait at Dewey & Ridge for:

   a) the RTS bus to come? _____minutes

   b) the PERT bus to come? _____minutes

6. How would you rate the following features of transferring at Dewey & Ridge?

	Very good	Good	Fair	Poor	Very Poor
Length of wait for RTS bus to arrive	____	____	____	____	____
Length of wait for PERT bus to arrive	____	____	____	____	____
The environment for waiting (comfort, shelter, etc.)	____	____	____	____	____

7. If routes 10, 14 and 15 were still operating in Greece during the afternoon and early evening hours, which bus would you have used for this trip today?

____PERT and transfer to routes 10 or 15 on Dewey Avenue

____Route 14 on Ridge Road and transfer to routes 10 or 15 on Dewey Avenue

____Routes 10 or 15 on Dewey Avenue only

Why would you select that particular way?

____Faster

____More reliable

____Cheaper

____More convenient

____More enjoyable

____More comfortable buses

____Simpler to use

____More personal service

____Other (specify)

8. How often do you transfer buses at Dewey & Ridge?

____ 4 - 7 days/week

____ 1 - 3 days/week

____ Less than once a week

9. How many cars are in your household?

____0 ____1 ____2 ____3 or more

10. In what age group do you belong?

____Under 20

____20 - 44

____45 - 65

____65 and over

11. Are you: ____Male ____Female

Thank you for your cooperation and help

Inbound
Outbound
____

Results of Transfer Study of May 1976

A summary of the results and three important cross-tabulations are contained in this section. While cross-tabulations are useful, the resultant small samples in each category result in large confidence ranges.

Variable	Response	Number	Percent	Adjusted Percent*
Day of Use	Thursday	54	54.5	54.5
	Friday	25	25.3	25.3
	Saturday	20	20.2	20.2
		99	100.0	100.0
Direction of Travel	Inbound (to CBD)	43	43.4	50.6
	Outbound(from CBD)	42	42.4	49.4
	Not Recorded	14	14.1	----
		99	100.0	100.0
Access Method to Transfer Point	RTS or PERT	68	68.7	69.4
(Question 3)	Walk	16	16.2	16.3
	Drive	1	1.0	1.0
	Driven or Picked Up	4	4.0	4.1
	Other	3	3.0	3.1
	No Transfer;No Response	6	6.1	6.1
	No Response	1	1.0	----
		99	100.0	100.0
Frequency of Use	4-7 days/week	35	35.4	37.6
(Question 8)	1-3 days/week	30	30.3	32.3
	Less Than 1 day/week	28	28.3	30.1
	No Response	6	6.1	----
		99	100.0	100.0
Method of Booking Trip	Phoned From Downtown	4	4.0	6.1
(Question 4)	Notified RTS Driver	35	35.4	53.0
	Phoned From Transfer Point	8	8.1	12.1
	Phoned From Home	7	7.1	10.6
	Other	12	12.1	18.2
	No Response	33	33.3	----
		99	100.0	100.0

*Adjusted percentage is based on elimination of non-respondents

Variable	Response	Number	Percent	Adjusted Percent
Origin or Destination Within Service Area	Dewey & Ridge Vicinity	13	13.1	14.6
(Questions 1 & 2)	Ridge (RT.14) Corridor	26	26.3	29.2
	Dewey (RT.10) Corridor	30	30.3	33.7
	Lake (RT.1) Corridor	1	1.0	1.1
	Outside 1/4 Miles From Fixed Bus Route	19	19.2	21.3
	No Response	10	9.1	----
		99	100.0	100.0
Travel Method Preference (if all fixed route buses were operating)	PERT and Transfer to RT. 10	23	23.2	27.7
(Question 7)	Route 14 (Ridge) and transfer to RT. 10	20	20.2	24.1
	Routes 10 or 15 (Dewey) only	40	40.4	48.2
	No Response	16	16.2	----
		99	100.0	100.0
Perceived Average RTS Wait Time	0-10 minutes	50	50.5	72.5
	11-20 minutes	15	15.2	21.7
(Question 5)	More than 20 minutes	4	4.0	5.8
	No Response	30	30.3	----
		99	100.0	100.0

MEAN WAIT TIME: 10.9 minutes

MEDIAN WAIT TIME: 9.9 minutes

STANDARD DEVIATION: 6.6 minutes

Variable	Response	Number	Percent	Adjusted Percent
Perceived Average PERT Wait Time (Question 5)	1-10 minutes	5	5.1	7.2
	11-20 minutes	21	21.2	30.4
	21-30 minutes	16	16.2	23.2
	31-40 minutes	5	5.1	7.2
	41-50 minutes	9	9.1	13.0
	51-60 minutes	6	6.1	8.7
	More than 1 hour	7	7.1	10.1
	No Response	30	30.3	----
		99	100.0	100.0

MEAN WAIT TIME: 36.1 minutes

MEDIAN WAIT TIME: 30.0 minutes

STANDARD DEVIATION: 22.9 minutes

ATTITUDES TOWARD WAIT TIME (Question 6)
(n=99)

ATTITUDE TOWARD	PERCENT OF THOSE RESPONDING					No Response	MEAN	STANDARD DEVIATION
	(1) Very Good	(2) Good	(3) Fair	(4) Poor	(5) Very Poor			
RTS WAIT TIME	33.7	42.2	18.1	3.6	2.4	16.2	1.99	.94
PERT WAIT TIME	3.8	11.4	21.5	31.6	31.6	20.2	3.76	1.14
WAITING ENVIRONMENT (COMFORT, SHELTER, ETC.)	4.8	14.5	37.3	25.3	18.1	16.2	3.37	1.09

	Faster	More Reliable	Cheaper	More Convenient	More Enjoyable	More Comfortable Buses	Simpler to Use	More Personal Service	Other
PERT and Transfer to or From Routes 10 or 15 (n=23)	17.4	17.4	13.0	52.2	8.7	17.4	13.0	8.7	17.4
Route 14 and Transfer to or from Routes 10 or 15 (n=20)	50.0	45.0	25.0	30.0	10.0	5.0	20.0	0.0	0.0
Routes 10 or 15 only (n=40)	60.0	55.0	32.5	55.0	7.5	5.0	37.5	5.7	2.5

Note: Totals exceed 100% because multiple responses were permitted.

PERCENTAGE OF PASSENGERS INDICATING VARIOUS REASONS FOR
TRAVEL METHOD PREFERENCE (IF ROUTES 10, 14 and 15
STILL OPERATED DURING OFF-PEAK HOURS)

(Question 7)

Variable	Response	Number	Percent	Adjusted Percent
Age of Rider (Question 10)	Under 20 years	23	23.2	24.2
	20-44 years	40	40.4	42.1
	45-65 years	21	21.2	22.1
	Over 65 years	11	11.1	11.6
	No Response	4	4.0	----
		99	100.0	100.0
Sex of Rider (Question 11)	Male	33	33.3	35.5
	Female	60	60.6	64.5
	No Response	6	6.1	----
		99	100.0	100.0
Number of Cars in Rider's Household (Question 9)	None	37	37.4	38.9
	One	33	33.3	34.7
	Two	16	16.2	16.8
	Three or More	9	9.1	9.5
	No Response	4	4.0	----
		99	100.0	100.0

95% CONFIDENCE RANGES FOR SAMPLE SIZE OF 99 (Assumes 100% Response Rate)

PERCENTAGE RESPONSE	CONFIDENCE RANGE
50%	± 9.8
40% or 60%	± 9.7
30% or 70%	± 9.0
20% or 80%	± 7.9
10% or 90%	± 5.9
5% or 95%	± 4.3

EXAMPLE: With 95% confidence the true value of a variable with a 50% response on the survey is between 40.2% and 59.8%.

CROSSTAB #1

TRAVEL METHOD PREFERENCE BY ACCESS METHOD TO TRANSFER POINT

```
                      ACCESS
             COUNT  I
           ROW PCT  I Transfer     Walk        Drive      Driven       Other     No Transfer
           COL PCT  I                                                            No response  ROW
           TOT PCT  I       1  I        2  I        3  I        4  I        6  I        7  I  TOTAL
MODE       ---------I----------I----------I----------I----------I----------I----------I
                 1  I      21  I        1  I        0  I        1  I        0  I        0  I     23
   PERT AND RT. 10  I    91.3  I      4.3  I      0.0  I      4.3  I      0.0  I      0.0  I   27.7
                    I    36.2  I      7.7  I      0.0  I     25.0  I      0.0  I      0.0  I
                    I    25.3  I      1.2  I      0.0  I      1.2  I      0.0  I      0.0  I
                   -I----------I----------I----------I----------I----------I----------I
                 2  I      13  I        4  I        1  I        1  I        1  I        0  I     20
  RT. 14 AND RT. 10 I    65.0  I     20.0  I      5.0  I      5.0  I      5.0  I      0.0  I   24.1
                    I    22.4  I     30.8  I    100.0  I     25.0  I     33.3  I      0.0  I
                    I    15.7  I      4.8  I      1.2  I      1.2  I      1.2  I      0.0  I
                   -I----------I----------I----------I----------I----------I----------I
                 3  I      24  I        8  I        0  I        2  I        2  I        4  I     40
       RT. 10 ONLY  I    60.0  I     20.0  I      0.0  I      5.0  I      5.0  I     10.0  I   48.2
                    I    41.4  I     61.5  I      0:0  I     50.0  I     66.7  I    100.0  I
                    I    28.9  I      9.6  I      0.0  I      2.4  I      2.4  I      4.8  I
                   -I----------I----------I----------I----------I----------I----------I
            COLUMN         58         13          1          4          3          4        83
             TOTAL       69.9       15.7        1.2        4.8        3.6        4.8     100.0

RAW CHI SQUARE =    13.35301 WITH    10 DEGREES OF FREEDOM.  SIGNIFICANCE =  0.2046
NUMBER OF MISSING OBSERVATIONS =     16
STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - RELEASE 6.02              06/17/76
```

CROSSTAB #2

```
                      ZONE
            COUNT   IDewey &    Rt. 14      Rt. 10     Other      Rt. 1
            ROW PCT I Ridge     Cor-        Cor-       Loca-      Cor-       ROW
            COL PCT IVicinity  ridor       ridor      tions      ridor      TOTAL
            TOT PCT I     1   I      2   I      3   I     4   I      5   I
ACCESS      --------I---------I----------I----------I---------I----------I
                 1  I     1   I     18   I     24   I    19   I      0   I     62
                    I   1.6   I   29.0   I   38.7   I  30.6   I    0.0   I   69.7
         Transfer   I   7.7   I   69.2   I   80.0   I 100.0   I    0.0   I
                    I   1.1   I   20.2   I   27.0   I  21.3   I    0.0   I
                   -I---------I----------I----------I---------I----------I
                 2  I    10   I      3   I      1   I     0   I      1   I     15
           Walk     I  66.7   I   20.0   I    6.7   I   0.0   I    6.7   I   16.9
                    I  76.9   I   11.5   I    3.3   I   0.0   I  100.0   I
                    I  11.2   I    3.4   I    1.1   I   0.0   I    1.1   I
                   -I---------I----------I----------I---------I----------I
                 3  I     0   I      1   I      0   I     0   I      0   I      1
           Drive    I   0.0   I  100.0   I    0.0   I   0.0   I    0.0   I    1.1
                    I   0.0   I    3.8   I    0.0   I   0.0   I    0.0   I
                    I   0.0   I    1.1   I    0.0   I   0.0   I    0.0   I
                   -I---------I----------I----------I---------I----------I
                 4  I     0   I      1   I      2   I     0   I      0   I      3
           Driven   I   0.0   I   33.3   I   66.7   I   0.0   I    0.0   I    3.4
                    I   0.0   I    3.8   I    6.7   I   0.0   I    0.0   I
                    I   0.0   I    1.1   I    2.2   I   0.0   I    0.0   I
                   -I---------I----------I----------I---------I----------I
                 6  I     1   I      1   I      1   I     0   I      0   I      3
                    I  33.3   I   33.3   I   33.3   I   0.0   I    0.0   I    3.4
           Other    I   7.7   I    3.8   I    3.3   I   0.0   I    0.0   I
                    I   1.1   I    1.1   I    1.1   I   0.0   I    0.0   I
                   -I---------I----------I----------I---------I----------I
                 7  I     1   I      2   I      2   I     0   I      0   I      5
        No transfer;I  20.0   I   40.0   I   40.0   I   0.0   I    0.0   I    5.6
        no response I   7.7   I    7.7   I    6.7   I   0.0   I    0.0   I
                    I   1.1   I    2.2   I    2.2   I   0.0   I    0.0   I
                   -I---------I----------I----------I---------I----------I
           COLUMN        13         26         30         19          1        89
            TOTAL      14.6       29.2       33.7       21.3        1.1     100.0

RAW CHI SQUARE =    57.07272 WITH    20 DEGREES OF FREEDOM.  SIGNIFICANCE =  0.0000
NUMBER OF MISSING OBSERVATIONS =    10
STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - RELEASE 6.02                     06/25/76
```

CROSSTAB #3

TRAVEL METHOD PREFERENCE BY SERVICE AREA ORIGIN OR DESTINATION

```
                 COUNT   I Dewey &    Rt. 14     Rt. 10     Other       Rt. 1
                 ROW PCT I  Ridge      Cor-       Cor-      Loca-       Cor-      ROW
                 COL PCT I Vicinity    ridor      ridor     tions       ridor     TOTAL
                 TOT PCT I       1  I       2  I       3  I       4  I       5  I
MODE             --------I---------I---------I---------I---------I---------I
                       1 I       1 I       4 I       3 I       9 I       0 I      17
                         I     5.9 I    23.5 I    17.6 I    52.9 I     0.0 I    22.7
    PERT and Rt. 10      I    11.1 I    18.2 I    11.1 I    56.3 I     0.0 I
                         I     1.3 I     5.3 I     4.0 I    12.0 I     0.0 I
                        -I---------I---------I---------I---------I---------I
                       2 I       4 I      12 I       1 I       2 I       0 I      19
                         I    21.1 I    63.2 I     5.3 I    10.5 I     0.0 I    25.3
                         I    44.4 I    54.5 I     3.7 I    12.5 I     0.0 I
    Rt. 14 and Rt. 10    I     5.3 I    16.0 I     1.3 I     2.7 I     0.0 I
                        -I---------I---------I---------I---------I---------I
                       3 I       4 I       6 I      23 I       5 I       1 I      39
                         I    10.3 I    15.4 I    59.0 I    12.8 I     2.6 I    52.0
                         I    44.4 I    27.3 I    85.2 I    31.3 I   100.0 I
         Rt. 10 only     I     5.3 I     8.0 I    30.7 I     6.7 I     1.3 I
                        -I---------I---------I---------I---------I---------I
                  COLUMN         9        22        27        16         1        75
                   TOTAL      12.0      29.3      36.0      21.3       1.3     100.0

RAW CHI SQUARE =    35.66333 WITH     8 DEGREES OF FREEDOM.  SIGNIFICANCE =  0.0000
NUMBER OF MISSING OBSERVATIONS =     24
STATISTICAL PACKAGE FOR THE SOCIAL SCIENCES SPSSH - RELEASE 6.02        06/25/76
```

APPENDIX A.7

DEWEY AND RIDGE TRANSFER POINT SURVEY

MARCH 31-APRIL 1, 1977

PERT dial-a-bus 288-318

☐ Already filled out questionnaire.

1. Where are you coming from? (Please give address or nearest intersection)

____

2. Where are you going? (Please give address or nearest intersection)

____

3. Are you using Dial-a-Bus on your trip?

_____ Yes, then how did you book a trip on Dial-a-Bus?	_____ No, then how will you get to (or from) Dewey & Ridge?
_____ phoned from downtown	_____ walk
_____ told RTS driver	_____ RTS bus
_____ phoned from Dewey & Ridge	_____ Dew-Ridge Bus
	_____ be driven
	_____ taxi
	_____ other, how? ________________

4. How many minutes do you usually have to wait at Dewey and Ridge for:
   a) The RTS Route #10 to come? _______ minutes
   b) The Dial-a-Bus to come? _______ minutes
   c) The Dew-Ridge to come? _______ minutes

5. How would you describe the following?	Very Good	Good	Fair	Poor	Very Poor
The time you wait for the bus to arrive	____	____	____	____	____
The time you wait for Dial-a-Bus to arrive	____	____	____	____	____
The time you wait for the Dew-Ridge Bus to come	____	____	____	____	____
The environment for waiting (comfort, shelter, etc.)	____	____	____	____	____

6. How often do you do the following things?	4-7days/ week	1-3 days/ week	Less than once a week	Neve
Ride RTS Route #10	____	____	____	____
Ride Dial-a-Bus	____	____	____	____
Ride the Dew-Ridge Bus	____	____	____	____
Transfer at Dewey and Ridge	____	____	____	____

7. How many cars in your household?
   ____ 0 ____ 1 ____ 2 ____ 3 or more

8. What age are you?
   ____ under 20 ____ 20-44 ____ 45-64 ____ 65 or over

9. Are you: ____ male ____ female

10. What is the purpose of your trip?

____ Shopping	____ Recreational Activity
____ Work	____ Medical
____ School	____ Going Home
____ Visiting	____ Other, what? ____________________

THANK YOU FOR YOUR HELP

Results of Dewey and Ridge Transfer Point Survey of March 31-April 1, 1977

USE OF DIAL-A-BUS	Percent (n=49)
Yes	34.7
No	65.3

METHOD OF BOOKING DIAL-A-BUS (multiple responses included)	(n=17)
Phoned from downtown	23.5
Told RTS driver	58.8
Phoned from Dewey & Ridge	47.1

ACCESS OR EGRESS TO DEWEY & RIDGE (Other than DAB)	(n=44)
Work	13.6
RTS	25.0
Dew-Ridge Bus	47.7
Driven	4.6
Taxi	2.3
Other	6.8

ATTITUDES

	(1) Very Good	(2) Good	(3) Fair	(4) Poor	(5) Very Poor	Mean
RTS Wait Time (n=41)	34.1	48.8	14.6	2.4	0.0	1.85
Dial-A-Bus Wait Time (n=33)	15.2	39.4	21.2	15.2	9.1	2.64
Dew-Ridge Bus Wait Time (n=41)	39.0	48.8	9.8	2.4	0.0	1.76
Transfer Environment (n=44)	11.4	43.2	29.5	6.8	9.1	2.59

USE OF TRANSIT MODES

	4-7 Days/Wk	1-3 Days/Wk	Less Than Once/Wk	Never
RTS Route 10 (n=43)	44.2	30.2	23.3	2.3
Dial-A-Bus (n=33)	21.2	24.2	42.4	12.1
Dew-Ridge Bus (n=40)	45.0	32.5	20.0	2.5
Transferring at Dewey & Ridge (n=34)	41.2	32.4	23.5	2.9

PERCEIVED WAIT TIMES	Median	Mean	Standard Deviation
RTS Bus (n=23)	10.4	12.1	6.5
Dial-A-Bus (n=17)	19.9	20.6	12.5
Dew-Ridge Bus (n=30)	10.3	10.8	7.6

TRIP PURPOSES	Percent (n=44)
Work	29.6
Shopping	6.8
School	4.6
Visiting	2.3
Recreation	11.4
Medical	2.3
Shopping plus other purposes	29.6
Other and other multi-purpose	13.6

DEMOGRAPHIC CHARACTERISTICS

Sex	(n=49)
Male	30.6
Female	69.4

Age	(n=48)
Under 20	22.9
20-44	37.5
45-64	29.2
Over 65	10.4

Household Auto Ownership	(n=48)
None	33.3
1	31.3
2	29.2
3 or more	6.3

ORIGIN AND DESTINATION (Number of Persons)

	DESTINATIONS									
ORIGINS	Down-town	¼ Mi. of Dewey & Ridge	Dewey Corri-dor	Ridge Corri-dor	Other DAB Locations	Rt. 15 Corridor Above N-gate	Other N-gate Locations	Irondequoit DAB Area	Other	Total
Downtown	0	0	8	5	1	5	0	0	0	19
¼ Mile of Dewey and Ridge	0	0	1	1	0	0	0	0	0	2
Dewey Corridor in DAB Areas	2	0	0	0	0	0	0	0	2	4
Ridge Corridor in DAB Areas	1	0	0	0	0	0	0	0	1	2
Other DAB Area Locations	0	0	0	1	0	0	0	1	0	2
Rt. 15 Corridor Above Northgate Plaza	0	0	0	0	0	0	0	0	0	0
Other Northgate Area Locations	0	0	0	0	0	0	0	0	0	0
Irondequoit DAB Area	0	0	0	0	2	0	0	0	0	2
Other Locations	0	0	4	6	0	0	1	0	0	11
TOTAL:	3	0	13	13	3	5	1	1	3	42

APPENDIX A.8

DEW-RIDGE SHUTTLE ON-BOARD SURVEY

NOVEMBER 1976

TIME ______ LRM
NGP

DEW-RIDGE QUESTIONNAIRE

This survey is intended to help us improve our service. Your help and time in completing the survey is very appreciated. Please return survey to the person distributing surveys when you are done.

☐ I have already filled out this form today.

---

1. Where did you get on this bus? ______________________
(nearest intersection)

2. Where did this trip actually start? ______________________
(address, city)

3. How did you get to this bus?
   1. ○ Transferred from RTS bus
   2. ○ Transferred from Dial-a-Bus
   3. ○ Walked, how many blocks? ______
   4. ○ Drove to bus stop
   5. ○ Was driven to bus stop
   6. ○ Was picked up at my door
   7. ○ Other, how? ________

4. How long were you travelling to get to this bus stop? ______ minutes.

5. How long did you wait for this bus? ______ minutes.

6. Where will you get off this bus? ______________________.
(nearest intersection)

7. Where is your destination? ______________________
(address, city)

8. How will you get to your destination from this bus?
   1. ○ Transfer to RTS bus
   2. ○ Transfer to Dial-a-Bus
   3. ○ Walk, how many blocks? ______
   4. ○ Drive myself
   5. ○ Will be driven
   6. ○ Bus will take me to my doorstep.
   7. ○ Other, how? ________

9. Approximately how long will it take you to get to your destination after the bus drops you off? ______ minutes.

10. What is the main purpose of your trip?
   1. ○ Work
   2. ○ Shopping
   3. ○ School
   4. ○ Medical
   5. ○ Recreational activity
   6. ○ Visiting
   7. ○ Other, what? ________

11. If the purpose of your trip is work, at what time do you start work? ______

    At what time do you finish? ______
    Are these regular hours? ______

12. How often do you use the following services:
(check appropriate column)

	4-7 days/week	1-3 days/week	Less than once a week	never
This bus (Dew-Ridge)	____	____	____	____
Dial-a-Bus	____	____	____	____
Rt. #10 - Dewey Avenue	____	____	____	____
Rt. #15 - Latta	____	____	____	____
Rt. #14 - West Ridge	____	____	____	____

13. Are you:
1. ( ) Employed
2. ( ) A Student
3. ( ) Retired
4. ( ) A homemaker
5. ( ) Self-employed
6. ( ) Other, what? ____________

14. Was there a car available for this trip?
1. ( ) No
2. ( ) Yes, with inconvenience to others
3. ( ) Yes, without inconvenience to others

15. Your age:
1. ( ) Under 20
2. ( ) 20-44
3. ( ) 45-64
4. ( ) 65 or over

16. Are you:
1. ( ) Female
2. ( ) Male

17. Do you have a valid driver's license?
1. ( ) Yes
2. ( ) NO

Name ____

Address ____

If you live north of English and Denise, could you answer the following questions, please.

18. Do you use the checkpoint bus stops at Dewey and Latta, Latta and Hampton, or Hampton and Denise?
1. ( ) yes, how often? ________________________________
2. ( ) no, why not? __________________________________

19. Can you describe any problems you have had with our new service?

Results of Dew-Ridge Shuttle On-Board Survey of November 1976

	Percent
I. USER CHARACTERISTICS	
Sex	(n=87)
Male	19.5
Female	80.5
Age	(n=87)
Under 20	11.5
20-44	16.1
45-64	26.4
65 and Over	46.0
Occupation	(n=86)
Student	8.1
Employed	27.9
Self-Employed	1.2
Retired	37.2
Homemaker	22.1
Unemployed	2.3
Other	1.2
Licensed Drivers	(n=84)
Licensed	23.8
Not Licensed	76.2
II. TRIP CHARACTERISTICS	
Time Boarded Bus	(n=24)
9-10 A.M.	16.7
10-11 A.M.	16.7
11-12 A.M.	4.2
12-1 P.M.	33.3
1-2 P.M.	25.0
2-3 P.M.	4.2
Direction of Travel	(n=70)
South or West	55.7
North or East	44.3

II. TRIP CHARACTERISTICS (Continued)

	Percent
Access Mode	(n=98)
RTS	17.3
Dial-A-Bus	3.1
Walk	52.0
Route Deviation	24.5
Driven	3.1
Perceived Access Time	(n=66)
0-5 Minutes	42.4
6-10 Minutes	25.8
11-15 Minutes	3.0
16-20 Minutes	10.6
Over 20 Minutes	18.2
Mean	12.9 Minutes
Standard Deviation	12.8 Minutes
Perceived Wait Time	(n=82)
0-5 Minutes	40.2
6-10 Minutes	20.7
11-15 Minutes	18.3
16-20 Minutes	6.1
Over 20 Minutes	14.6
Mean	11.9 Minutes
Standard Deviation	9.3 Minutes
Egress Mode	(n=96)
RTS	26.0
Dial-A-Bus	2.1
Walk	68.8
Deviation	2.1
Other	1.0
Perceived Egress Time	(n=56)
0-5 Minutes	46.4
6-10 Minutes	17.9
11-15 Minutes	3.6
16-20 Minutes	14.3
Over 20 Minutes	17.9
Mean	13.5 Minutes
Standard Deviation	15.7 Minutes
Trip Purpose	(n=91)
Work	27.5
School	3.3
Medical	9.9
Shopping	46.2
Recreation	1.1
Personal Visit	6.6
Other	5.5

II. TRIP CHARACTERISTICS (Continued)

Use of Checkpoints (for persons residing above English & Denise Roads)	Percent (n=31)
Use Checkpoints	25.8
Do Not Use Checkpoints	74.2

Availability of Auto for Trip	(n=83)
Not Available	84.3
Available, but inconvenient for others	14.5
Available and convenient	1.2

III. TRAVEL CHARACTERISTICS

Use of Dew-Ridge Bus	(n=86)
4-7 Days/Week	33.7
1-3 Days/Week	37.2
Less than once a week	24.4
First time	4.7

Use of Dial-A-Bus	(n=85)
4-7 Days/Week	5.9
1-3 Days/Week	8.2
Less than once a week	18.8
Never	65.9
First time today	1.2

Use of RTS Route 10 (Dewey to CBD)	(n=85)
4-7 Days/Week	18.8
1-3 Days/Week	9.4
Less than once a week	20.0
Never	50.6
First time today	1.2

Use of RTS Route 15 (Dewey to Kodak Park)	(n=85)
4-7 Days/Week	2.4
1-3 Days/Week	1.2
Less than once a week	10.6
Never	85.9

Use of RTS Route 14 (Ridge)	(n=85)
4-7 Days/Week	2.4
1-3 Days/Week	1.2
Less than once a week	14.1
Never	82.4

APPENDIX A.9

APRIL 1975 WORK SUBSCRIPTION USERS' SURVEY (GREECE)

JOB # 359-15

Respondent # ______________________________ Zip Code ________________

Hello. I'm ____________________ of Slade Research Associates. We are conducting a survey for the Rochester Genesee Regional Transportation Authority among persons who are familiar with their PERT subscription service.

1a. Is our information correct that you either have used or are now using PERT subscription service?

☐ Yes
☐ No (TERMINATE)

b. Do you currently use this service?

☐ 1 Yes (SKIP TO #2)
☐ 2 No (CONTINUE. BE SURE TO USE PAST TENSE IN ALL QUESTIONS WITH ALTERNATIVE WORDING)

c. How do you get to work now? Do you always drive your own car, are you always a passenger in someone else's car, do you participate in a car pool, or do you take a bus?

☐ 1 Drives own car
☐ 2 Passenger in another car
☐ 3 Car pool
☐ 4 Bus
☐ 5 Other (specify)

____

d. Was there something you found unsatisfactory about PERT subscription service that caused you to stop using it?

☐ Yes (ASK "e" AND SKIP TO #2)
☐ 9 No (SKIP TO "f")

e. What did you find unsatisfactory? (DO NOT READ LIST)

☐ 1 Length of trip
☐ 2 Inflexibility of boarding times
☐ 3 Lack of privacy
☐ 4 Inability to make stops en route
☐ 5 Cost
☐ 6 Unreliability of service
☐ 7 Other (specify)

____

f. Why do you no longer use the service? ______________________

____

____

____

2. Which PERT subscription route (do/did) you take - Kodak Park East, Rochester Products or the Lake and Ridge Feed-A-Bus?

☐ 1 Kodak Park East
☐ 2 Rochester Products
☐ 3 Lake and Ridge Feed-A-Bus

3. (Do/did) you use the service both mornings and evenings, mornings only or evenings only?

☐ 1 Both (CONTINUE)
☐ 2 Mornings only (ASK #4-#6 AND SKIP TO #9)
☐ 3 Evenings only (SKIP TO #7)

4. Approximately how many minutes (is/was) your average ride to work each morning? (DO NOT READ LIST)

☐ 1 Less than 11 minutes
☐ 2 11 - 20 minutes
☐ 3 21 - 30 minutes
☐ 4 31 - 40 minutes
☐ 5 41 - 50 minutes
☐ 6 Over 50 minutes

5. PERT understands that it is important that you arrive each morning on time. Approximately how many days each month (do/did) you arrive at your destination later than scheduled? (DO NOT READ LIST)

☐ 1 One day
☐ 2 Two days
☐ 3 Three days
☐ 4 Four days
☐ 5 Five days
☐ 6 Six or more days

6. Approximately how many minutes (does/did) it take you to get to the room in which you work, after the bus (has/had) dropped you off? (DO NOT READ LIST)

☐ 1 Less than 5 minutes
☐ 2 5 - 9 minutes
☐ 3 10 - 14 minutes
☐ 4 15 - 19 minutes
☐ 5 20 minutes or more

7. Approximately how many minutes (is/was) your average ride home each evening? (DO NOT READ LIST)

☐ 1 Less than 11 minutes
☐ 2 11 - 20 minutes
☐ 3 21 - 30 minutes
☐ 4 31 - 40 minutes
☐ 5 41 - 50 minutes
☐ 6 Over 50 minutes

(FOR USERS OF THE KODAK PARK EAST AND ROCHESTER PRODUCTS ROUTES)

8. When you finish work, how long (do/did) you wait before the PERT bus (picks/picked) you up? (DO NOT READ LIST)

FOR USERS OF THE LAKE AND RIDGE FEED-A-BUS ROUTE ONLY: When you (arrive/arrived) at Lake and Ridge, how long (do/did) you wait before the PERT bus (picks/picked) you up? (DO NOT READ LIST)

- ☐ 1 Less than 5 minutes
- ☐ 2 5 - 9 minutes
- ☐ 3 10 - 14 minutes
- ☐ 4 15 - 19 minutes
- ☐ 5 20 minutes or more

9. Before you began riding PERT, how did you used to get to work? Did you always drive your own car, were you always a passenger in someone else's car, did you participate in a car pool, or did you take a bus?

- ☐ 1 Drove own car
- ☐ 2 Passenger in another car
- ☐ 3 Car pool
- ☐ 4 Bus
- ☐ 5 Other (specify)

NOTE: IF RESPONDENT IS NOT A CURRENT USER, SKIP TO #12.

10. If PERT service were no longer available, how would you get to work? Would you always drive your own car, always be a passenger in someone else's car, participate in a car pool, or take a bus?

- ☐ 1 Drive own car
- ☐ 2 Passenger in another car
- ☐ 3 Car pool
- ☐ 4 Bus
- ☐ 5 Other (specify)

11a. PERT is considering offering a special transfer option for evening subscription patrons. It would allow regular subscription patrons to take a bus to one of the major shopping malls after work, and then to use Dial-a-Bus service to return home at no additional charge over the regular subscription fares. Would you use such an option if it were available?

- ☐ 1 Yes (CONTINUE)
- ☐ 2 No (SKIP TO #12)
- ☐ 3 Not sure (SKIP TO #12)

b. How often do you think you would use such an option? (READ LIST)

- ☐ 1 About once a month,
- ☐ 2 Twice a month,
- ☐ 3 Once a week,
- ☐ 4 Twice a week, or
- ☐ 5 More than twice a week?
- ☐ 6 Not sure (DO NOT READ)

12. In general, what do you think is PERT'S most attractive feature? (DO NOT READ LIST. CHECK OR WRITE IN ONE FEATURE ONLY)

- ☐ 1 Not having to drive one's car in traffic
- ☐ 2 Being picked up at one's home
- ☐ 3 Being assured of a seat on the bus
- ☐ 4 Low cost
- ☐ 5 Dependability of service
- ☐ 6 Other (specify)

13. What do you think is PERT'S most unattractive feature? (DO NOT READ LIST. CHECK OR WRITE IN ONE FEATURE ONLY)

- ☐ 1 Length of trip
- ☐ 2 Inflexibility of boarding times
- ☐ 3 Lack of privacy
- ☐ 4 Inability to make stops en route
- ☐ 5 Cost
- ☐ 6 Unreliability of service
- ☐ 7 Other (specify)

14. (Are/were) the drivers always courteous?

- ☐ 1 Yes
- ☐ 2 No

15. (Do/did) you find that purchasing the tickets and arranging the schedule (is/was) a convenient process?

- ☐ 1 Yes
- ☐ 2 No

16. (Does/did) it cost you less to use PERT than it would to drive your own car to and from work?

- ☐ 1 Yes
- ☐ 2 No

17. How many blocks is it from your home to the nearest bus stop? (DO NOT READ LIST)

- ☐ 1 Less than a block
- ☐ 2 1 - 3 blocks
- ☐ 3 4 - 5 blocks
- ☐ 4 6 or more blocks
- ☐ 5 Not sure

18a. Do you ever use RTS buses or Dial-a-Bus for trips other than going to or coming from work?

- ☐ Yes
- ☐ 1 No (SKIP TO #19)

b. Do you ever use Dial-A-Bus?

- ☐ Yes
- ☐ No (SKIP TO "e")

18c. Do you use it occasionally or frequently?

☐ 2 Occasionally
☐ 3 Frequently

d. Do you ever use RTS buses?

☐ Yes
☐ No (SKIP TO #19)

e. Do you use RTS buses occasionally or frequently?

☐ 4 Occasionally
☐ 5 Frequently

19. How did you first learn about PERT subscription service? (DO NOT READ LIST. CHECK OR WRITE IN ONE METHOD ONLY.)

☐ 1 Direct mail brochure at home
☐ 2 Newspaper ad
☐ 3 "Kodakery"
☐ 4 Fellow worker
☐ 5 Friend, neighbor, family member
☐ 6 Other (specify)

20. How many automobiles are owned by members of your household?

☐ 1 None
☐ 2 One
☐ 3 Two
☐ 4 Three
☐ 5 Four or more

CHECK BEFORE ASKING #22

21. Sex of Respondent

☐ 1 Male
☐ 2 Female

22. Now I have some questions that will be used for purposes of classification only. Are you married?

☐ 1 Yes
☐ 2 No

23. As far as your age group is concerned, are you:

☐ 1 Under 15, (SKIP TO #25)
☐ 2 15 - 24,
☐ 3 25 - 44,
☐ 4 45 - 64, or
☐ 5 65 or over?

24. Do you have a driver's license?

☐ 1 Yes
☐ 2 No

25. How many people, including yourself, are living in your household at the present time?

☐ 1 One
☐ 2 Two
☐ 3 Three
☐ 4 Four
☐ 5 Five
☐ 6 Six
☐ 7 Seven or more

26. How many of these people are currently employed full-time?

☐ 1 None
☐ 2 One
☐ 3 Two
☐ 4 Three
☐ 5 Four or more

27a. Did you graduate from high school?

☐ Yes
☐ 1 No (SKIP TO #28)

b. Did you attend college?

☐ Yes
☐ 2 No (SKIP TO #28)

c. Did you graduate from college?

☐ Yes
☐ 3 No (SKIP TO #28)

d. Have you ever done any post-graduate work?

☐ 5 Yes
☐ 4 No

28. Do you live in a single family house, a multiple family house, a town house or an apartment?

☐ 1 Single family house
☐ 2 Multiple family home
☐ 3 Town house
☐ 4 Apartment (SKIP TO #30)
☐ 5 Other (specify)

____

29. Do you own or rent?

☐ 1 Own
☐ 2 Rent

30. How long have you lived at your present address? (DO NOT READ LIST)

☐ 1 Less than 6 months
☐ 2 6 months but less than 1 year
☐ 3 1 year but less than 2 years
☐ 4 2 - 5 years
☐ 5 Over 5 years

31. What was the total income of all the members of your household in 1974? Was it:

☐ 1 Less than $5,000
☐ 2 $5,000 - $9,999
☐ 3 $10,000 - $14,999
☐ 4 $15,000 - $20,000, or
☐ 5 Over $20,000?

32. That's the last question. What general comments would you like to make about PERT subscription service that haven't already been covered by your answers to my questions?

____

____

____

____

____

____

____

THANK YOU VERY MUCH.

Interviewer's Initials _____ Date ____________________ Edited ____ Validated ____

Results of Work Subscription Users Survey of April 1975

	Variable	Response	Adjusted Percent
1(b)	Status of Use (n=124)	Current User	56.5%
		Former User	43.5%
User Characteristics:			
21.	Sex (n=124)	Male	56.5
		Female	43.5
23.	Age (n=124)	15-24	12.1
		25-44	40.3
		45-65	47.6
22.	Marital Status (n=124)	Married	83.1
		Not married	16.9
28.	Type of Housing (n=123)	Single-family	76.4
		Multiple-family home	0.8
		Townhouse	7.3
		Apartment	14.6
		Other	0.8
29.	Home Ownership (n=123)	Own	77.2
		Rent	22.8
30.	Length of Residence at present address (n=124)	Less than 6 months	3.2
		6 months-1 year	8.1
		1 year-2 years	6.5
		2 years-5 years	25.0
		More than 5 years	57.3
31.	Annual household income (n=97)	\$5,000-\$9,999	5.2
		\$10,000-\$14,999	19.6
		\$15,000-\$20,000	25.8
		Over \$20,000	49.5
32.	Education (n=123)	Not a high school graduate	8.9
		High school graduate	43.9
		Some college	16.3
		College graduate	21.1
		Some post-graduate work	9.8

20.	Household Auto Ownership (n=124)	0 cars	4.0
		1 car	61.3
		2 cars	27.4
		3 cars	3.2
		4 or more cars	4.0
		Average: 1.42	
		(assumes 4.1 for '4 or more')	
24.	Drivers' License (n=124)	Yes	83.9
		No	16.1
18.	Use of Other Transit Modes (n=124)	RTS	8.0
		DAB	6.4
		RTS & DAB	13.7
		Never	71.8
25.	Household Size (n=124)	1	8.9
		2	32.3
		3	16.9
		4	26.6
		5	6.5
		6	7.3
		7 or more	1.6
		Average: 3.18	
		(assumes 7 for '7 or more')	
26.	Employed Workers in Household (n=121)	1	3.3
		2	47.9
		3	40.5
		4 or more	8.3
		Average: 2.55	
		(assumes 4.1 for '4 or more')	

Trip Characteristics:

2.	Route (n=124)	Kodak Park East	80.6
		Rochester Products	7.3
		Feeder Subscription	12.1
3.	Time of Use (n=124)	AM	16.9
		PM	8.9
		Both	74.2
17.	Distance from RTS Bus Stop (n=124)	Less than a block	10.5
		1-3 blocks	27.4
		4-5 blocks	13.7
		6 or more blocks	23.4
		Don't know	25.0

9.	Former Mode of Travel (n=124)	Drive	53.2
		Auto passenger	12.9
		Carpool	8.1
		RTS bus	16.9
		Always used PERT	8.9
10.	Alternative Travel Mode (current users; n=69)	Drive	55.1
		Auto passenger	10.1
		Carpool	11.6
		RTS bus	20.3
		Walk	2.9
1(c)	Present Travel Mode (former users; n=53)	Drive	49.1
		Auto passenger	20.8
		Carpool	15.1
		RTS bus	7.5
		Walk	7.5
12.	Most Attractive Feature (n=124)	Not driving	19.4
		Home pickup	57.3
		Low cost	2.4
		Dependability	7.3
		Other	13.7
13.	Least Attractive Feature (n=123)*	Trip length	23.6
		Inflexibility	9.8
		Lack of privacy	0.8
		High cost	3.3
		Unreliability	7.3
		Other	22.8
		Nothing unattractive	32.5
1(e)	Reason for Discontinuing Use (former users; n=54)	Trip length	29.6
		Inflexibility	5.6
		High cost	3.7
		Unreliability	9.3
		Other	51.9
14.	Drivers Courteous? (n=124)	Yes	94.4
		No	5.6
15.	Trip Schedule/ Ticket Purchase convenient? (n=116)*	Yes	90.5
		No	9.5
16.	PERT Cheaper than Car? (n=96)*	Yes	47.9
		No	52.1

4.	Perceived AM Ride Time (n=112)	0-10 minutes	8.9
		11-20 minutes	40.2
		21-30 minutes	26.8
		31-40 minutes	13.4
		41-50 minutes	4.5
		Over 50 minutes	6.3
6.	Perceived Drop-off to Desk Time (n=111)	Less than 5 minutes	45.0
		5-9 minutes	40.5
		10-14 minutes	9.0
		15-19 minutes	3.6
		20 or more minutes	1.8
5.	Late Work Arrivals per Month (n=113)	None	63.7
		One	17.7
		Two	9.7
		Three	5.3
		Four or more	3.6
7.	Perceived PM Ride Time (n=102)*	0-10 minutes	5.9
		11-20 minutes	39.2
		21-30 minutes	26.5
		31-40 minutes	10.8
		41-50 minutes	8.8
		50 or more minutes	8.8
8.	After-work Wait Time (n=103)	Less than 5 minutes	46.6
		5-9 minutes	20.4
		10-14 minutes	15.5
		15-19 minutes	4.9
		20 or more minutes	12.6
19.	First PERT information (n=124)	Direct mail	34.7
		Newspaper ad	23.4
		"Kodakery"	9.7
		Other worker	7.3
		Friend, neighbor, family	12.1
		Other	12.9
20.	Potential Use of 'Stop & Shop' Option (current users only; n=69)	Yes	44.9
		3 times/week or more	1.5
		Twice/week	4.3
		Once/week	11.6
		Twice/month	17.4
		Once/month	10.1
		No	47.8
		Don't know	7.3

---

* Chi-square statistic for responses differentiated by current and former users significant at $\alpha < .05$.

APPENDIX A.10

RTS FIXED-ROUTE ON-BOARD SURVEY

MARCH 1976

This survey is being administered by the Regional Transit Service with the intention of improving bus service. Please take the time to answer these few questions. All answers will remain strictly confidential.

If you have already completed this questionnaire today, do not fill it out again, but put an "X" in the box below.

Please return this form to the person distributing questionnaires on the bus. We are very grateful for your help.

☐ I have already filled out this form today.

---

1. Are you:

_____ Male
_____ Female

2. In what age group do you belong?

_____ Under 20
_____ 20 - 44
_____ 45 - 65
_____ 65 and over

3. Do you have a valid drivers' license?

_____ Yes
_____ No

4. Are you:

_____ Employed
_____ Self-employed
_____ A Student
_____ A Homemaker
_____ Retired
_____ Other

5. What is the highest level of schooling that you have completed?

_____ Grade School
_____ Some High School
_____ High School Graduate
_____ Some College
_____ College Bachelor's Degree
_____ Some Graduate School

6. Where did your trip begin? (Please enter street address and city)

____

7. What is the final destination of your trip? (Pls.enter street address and city)

____

8. What is the reason for your trip?

_____ Work
_____ School
_____ Shopping
_____ Medical,Dental
_____ Personal Visit
_____ Recreation
_____ Personal Business
_____ Other (Specify) __________

9. How would you make this trip if this bus was not operating?

_____ I would not make this tip
_____ Drive a car myself
_____ Be driven by someone
_____ Use another bus Route __________
_____ Walk or bicycle
_____ Taxi
_____ Other (specify) __________

10. Is this trip part of a round trip by transit today?

_____ Yes
_____ No

11. How many cars are in your household?

_____ None
_____ One
_____ Two
_____ Three or more

12. Check any of the following features of using this bus that you are not satisfied with. If you feel that all are satisfactory, check "All O.K." at the bottom.

_____ Getting to or from the bus stop
_____ Waiting for the bus (too long a wait)
_____ Getting on and off the bus
_____ Lack of privacy (like in a car)
_____ Courtesy and helpfulness of the drivers
_____ Speed of the ride
_____ Comfort of the ride
_____ Cost of the bus ride
_____ Number of transfers to get where you're going
_____ Bus schedule (buses run when you need them)

_____ All O.K.

Name __________________________________
Address __________________________________
Telephone __________________________________

YOUR OPINIONS OF BUS TRAVEL

On the scales below, please indicate your general opinion of bus travel for journeys about Rochester. Base your opinion on what you have experienced or heard about local travel by each mode from the user's viewpoint.

To indicate your opinion, look at the descriptive scales below, each of which allows for a range of opinions on a particular characteristic, such as COMFORT. Then, mark what you consider to be the single most appropriate description on each scale by circling the relevant number. For instance, on the COMFORT scale, if you thought buses were a very comfortable for of travel for journeys in Rochester, you would circle "1" on the scale; however, if you thought they were a slightly uncomfortable form of travel, you would circle "4," and so forth.

TRAVEL CHARACTERISTICS	(Buses are:)	Very (1)	Slightly (2)	Neither or Both Equally (3)	Slightly (4)	Very (5)	(Buses are:)
COST OF TRAVEL	Inexpensive	1	2	3	4	5	Expensive
ENJOYABLENESS	Enjoyable Form of Travel	1	2	3	4	5	Unenjoyable
SPEED	Fast	1	2	3	4	5	Slow
CONVENIENCE	Convenient Form of Travel	1	2	3	4	5	Inconvenient
STATUS	High Status Form of Travel	1	2	3	4	5	Low Status
COMFORT (Seats, Ride, etc.)	Comfortable	1	2	3	4	5	Uncomfortable
MODERNITY	Modern Form of Travel	1	2	3	4	5	Old-fashioned
SAFETY	Safe Form of Travel	1	2	3	4	5	Dangerous Form
SIMPLICITY	Simple to Use	1	2	3	4	5	Complicated
PUNCTUALITY	Provide On-Time Arrivals	1	2	3	4	5	Provide Late Arrivals
NOISE	Noisy	1	2	3	4	5	Quiet

YOUR RANKING OF THE RELATIVE IMPORTANCE OF THE DIFFERENT TRAVEL CHARACTERISTICS

Listed below are the set of travel characteristics which appeared in the previous question. In the blanks next to each characteristic, please indicate how important that characteristic is in your decision to use car or bus for local travel, by placing one of the following "importance" numbers in the blank.

3 - Very important
2 - Moderately important
1 - Unimportant, or don't consider it

_______ Cost of Travel
_______ Enjoyableness
_______ Convenience
_______ Status
_______ Speed
_______ Comfort (seats, noise, ride, etc.)
_______ Modernity
_______ Safety
_______ Simplicity
_______ Punctuality

Thank you for your cooperation and time.

CROSS-TABULATION OF RESULTS BY TIME OF DAY

(Total Sample Sizes: Day=632, Night=313)

(Adjusted Percentages Listed)

Variable	Response	Day (before 9 pm)	Night (after 9 pm)
Demographic Characteristics:			
Sex		(n=624)	(n=305)
	Male	36.2	65.6
	Female	63.8	34.4
		100.0	100.0
	χ^2 significance level <0.0001		
Age		(n=625)	(n=304)
	Under 20 years	35.5	35.9
	20-44 years	29.1	48.4
	45-65 years	22.6	13.2
	Over 65 years	12.8	2.6
		100.0	100.0
	χ^2 significance level <0.0001		
Possession of Valid Driver's License		(n=622)	(n=308)
	Yes	42.0	40.9
	No	58.0	59.1
		100.0	100.0
	χ^2 significance level = 0.82		
Occupation		(n=623)	(n=301)
	Employed	43.3	54.8
	Self-employed	1.9	4.3
	Student	30.5	28.6
	Homemaker	7.7	3.0
	Retired	11.6	3.0
	Other	5.0	6.3
		100.0	100.0
	χ^2 significance level <0.0001		

Variable	Response	Day (before 9 pm)	Night (after 9 pm)
Education (highest level completed)		(n=615)	(n=304)
	Some grade school	8.8	11.8
	Some high school	29.9	24.7
	High school graduate	31.5	29.6
	Some college	19.7	24.7
	College Bachelor's degree	6.3	5.3
	Some graduate school	3.7	3.9
		100.0	100.0
	χ^2 significance level = 0.23		
Trip/Transit Characteristics:			
Route (used by rider)		(n=632)	(n=313)
	#5	23.7	21.1
	#7	20.9	28.4
	#9	9.0	26.2
	#10	38.9	20.1
	#11	0.0	4.2
	#12	7.4	0.0
		100.0	100.0
	χ^2 significance level <0.0001		
Day of Week		(n=631)	(n=313)
	Thursday	54.4	69.0
	Saturday	45.6	31.0
		100.0	100.0
	χ^2 significance level <0.0001		
Method of Returning Questionnaire		(n=632)	(n=313)
	Given to surveyor (on board bus)	73.9	92.0
	By mail	26.1	8.0
		100.0	100.0
	χ^2 significance level <0.0001		

Variable	Response	Day (before 9 pm)	Night (after 9 pm)
Trip Purpose		(n=565)	(n=246)
	Work	33.1	37.0
	School	10.4	8.1
	Shopping	18.2	5.7
	Medical, dental	2.3	0.4
	Personal visit	9.7	12.2
	Recreation	3.7	11.8
	Personal business	9.7	6.1
	Other	3.5	9.3
	More than one purpose	9.2	9.3
		100.0	100.0
	χ^2 significance level <0.0001		
Alternate Mode for Trip		(n=553)	(n=243)
	Would not go	25.7	14.4
	Drive	16.8	9.9
	Be driven	27.1	23.9
	Use another bus	7.1	7.0
	Walk or bicycle	8.9	17.3
	Taxi	4.2	11.9
	Other	3.6	4.1
	More than one mode	6.7	11.5
		100.0	100.0
	χ^2 significance level <0.0001		
Alternate Bus Route (if respondent checked "use another bus" above)		(n=15)	(n=6)
	#1	6.7	16.7
	#5	26.7	16.7
	#7	13.3	33.3
	#9	13.3	0.0
	#10	13.3	0.0
	#11	13.3	33.3
	#12	6.7	0.0
	#30	6.7	0.0
		100.0	100.0
	χ^2 significance level = 0.68		
Round Trip by Transit		(n=537)	(n=241)
	Yes	78.4	74.7
	No	21.6	25.3
		100.0	100.0
	χ^2 significance level = 0.30		

Variable	Response	Day (before 9 pm)	Night (after 9 pm)
Number of Cars in Rider's Household		(n=563)	(n=244)
	None	26.5	40.2
	One	41.2	36.1
	Two	23.6	16.0
	Three or more	8.7	7.8
		100.0	100.0
	Mean number of cars	1.16	0.93

χ^2 significance level = 0.0009

PERCENTAGE OF RESPONDENTS INDICATING VARIOUS REASONS FOR DISSATISFACTION WITH RTS SERVICE

(Adjusted Percentages Listed*)

REASON	DAYTIME %	NIGHTTIME %	x^2 Significance Level
Sample Size	n = 535	n = 233	
Getting to/from bus stop	7.5	7.7	.98
Waiting for bus	27.7	44.2	<.0001
Getting on/off bus	3.7	2.2	.36
Lack of privacy	4.7	6.4	.40
Courtesy/helpfulness of drivers	6.5	9.9	.15
Speed	7.5	6.9	.88
Comfort	9.5	15.9	.02
Cost	9.9	12.0	.45
Number of transfers	3.4	7.3	.03
Bus schedule (buses don't run when you need them)	15.5	21.0	.08
All satisfactory	52.2	40.8	.005

*Persons not responding to any choices excluded; totals exceed 100% because of multiple responses.

ATTITUDES OF RESPONDENTS TOWARD VARIOUS RTS TRAVEL CHARACTERISTICS

(Cross-Tabulation With Time of Day; Adjusted Percentages Listed)

Travel Characteristic	Response Relative to: Left	→ Right	Time of Day D=day N=night	Sample Size	PERCENT OF THOSE RESPONDING (1) Very	(2) Slightly	(3) Neither or both Equally	(4) Slightly	(5) Very	Mean	x^2 Significance Level
Simplicity	Simple	Complicated	D	445	57.3	19.8	17.1	5.2	0.7	1.73	0.09
			N	171	55.0	14.6	21.1	6.4	2.9	1.88	
Safety	Safe	Dangerous	D	448	53.1	22.8	18.1	4.9	1.1	1.78	0.34
			N	174	51.1	23.0	16.1	9.2	0.6	1.85	
Convenience	Convenient	Inconvenient	D	450	47.3	19.8	21.6	9.3	2.0	1.99	0.03
			N	174	37.9	21.8	29.9	5.7	4.6	2.17	
Cost	Inexpensive	Expensive	D	455	32.7	24.4	28.1	10.5	4.2	2.29	0.20
			N	179	39.1	22.3	22.3	8.9	7.3	2.23	
Modernity	Modern	Old-Fashioned	D	438	24.4	28.1	36.8	8.0	2.7	2.37	0.46
			N	168	30.4	23.8	33.3	8.3	4.2	2.32	
Enjoyableness	Enjoyable	Unenjoyable	D	441	21.5	24.5	33.8	14.5	5.7	2.58	0.33
			N	176	27.8	19.3	35.2	11.4	6.3	2.49	
Noise	Noisy	Quiet	D	439	19.1	31.0	31.0	14.8	4.1	2.54	0.48
			N	176	21.0	28.4	30.1	13.1	7.4	2.58	
Punctuality	On-Time	Late	D	447	26.6	23.9	25.1	16.6	7.8	2.55	1.00
			N	174	26.4	22.4	26.4	17.2	7.5	2.57	
Speed	Fast	Slow	D	441	17.7	25.4	38.3	14.3	4.3	2.62	0.28
			N	176	19.3	26.1	38.1	9.1	7.4	2.59	
Comfort	Comfortable	Uncomfortable	D	459	20.3	27.5	27.0	14.6	10.7	2.68	0.13
			N	177	28.2	21.5	22.0	16.9	11.3	2.61	
Status	High	Low	D	414	11.8	19.1	45.7	13.3	10.1	2.91	0.03
			N	169	18.3	24.3	39.6	13.6	4.1	2.61	

IMPORTANCE OF VARIOUS RTS TRAVEL CHARACTERISTICS

(Cross Tabulation With Time of Day; Adjusted Percentages Listed)

Travel Characteristic	Time of Day D=Day N=Night	Sample Size	PERCENT OF THOSE RESPONDING			Mean	χ^2 Significance Level
			Very Important (3)	Moderately Important (2)	Unimportant (1)		
Safety	D	433	76.7	15.9	7.4	2.69	0.58
	N	162	77.8	16.0	6.2	2.72	
Convenience	D	446	74.0	20.9	5.2	2.69	0.29
	N	163	71.8	19.6	8.6	2.63	
Punctuality	D	423	73.5	18.9	7.6	2.66	0.74
	N	157	72.0	18.5	9.6	2.63	
Cost	D	436	56.2	34.2	9.6	2.47	0.02
	N	162	65.4	21.6	13.0	2.52	
Speed	D	422	30.8	54.3	14.9	2.16	0.0002
	N	164	47.0	36.0	17.1	2.30	
Comfort	D	422	29.9	50.0	20.1	2.10	0.03
	N	161	41.0	38.5	20.5	2.21	
Simplicity	D	415	31.1	46.0	22.9	2.08	0.28
	N	158	35.4	38.6	25.9	2.09	
Enjoyableness	D	421	20.8	50.2	29.0	1.92	0.14
	N	158	25.9	41.1	32.9	1.93	
Modernity	D	410	16.8	43.9	39.3	1.78	0.06
	N	154	25.3	42.2	32.5	1.93	
Status	D	408	15.9	29.7	54.4	1.62	0.02
	N	153	26.8	26.1	47.1	1.80	

APPENDIX A.11

DECEMBER 1976 FORMER FIXED-ROUTE USERS' TELEPHONE SURVEY (IRONDEQUOIT)

NAME ____________________

PHONE# ____ ____________

SURVEY# ____________________

SURVEY OF FORMER IRONDEQUOIT RTS USERS

Hello, my name is ____________________ and I'm calling on behalf of the Rochester-Genesee Regional Transportation Authority. Last spring you filled out a questionnaire while riding route ______. Since that time service has changed on that route and we would like to know how it has affected you.

1. Are you aware of the changes that have been made?
   1. ________yes
   2. ________no (skip to #7)
   3. ________uncertain

2. Since April, have you wanted to go somewhere you used to get to by route _____?
   1. _______ yes, how often? ____________________
   2. _______ no (skip to #7)

3. Were you able to get there by some other means?
   1. _______ yes
   2. _______ no (skip to #7)

4. How do you travel now? (Open end response, so take notes)

   major way: ______________________________

   ____

   others: ______________________________

   ____

   ____

5. (If they select a transit option, read)
   Since the changes, do you feel bus service has improved?

   (For other options, read)
   Is this new method better than using the bus service?

   1. _______ yes
   2. _______ no
   3. _______ about the same (skip to #7)

6. Why do you feel this way? (rank responses)

1. _______ Speed
2. _______ Reliability
3. _______ Cost
4. _______ Doorstep service
5. _______ Transferring
6. _______ Enjoyableness
7. _______ Simplicity
8. _______ Personal service
9. _______ Convenience
10. _______ Other, what? ________________

7. Have you ever used:
a. Dial-a-Bus, door-to-door service?
1. ______ yes. How often do you use it?
    1. ______ 4-7 days/week
    2. ______ 1-3 days/week
    3. ______ less than once a week
    4. ______ only once, why? ______________________________

2. ______ no

b. The Irondequoit Loop, running on Hudson, Ridge, Kings Highway and Titus?
1. ______ yes. How often do you use it?
    1. ______ 4-7 days/week
    2. ______ 1-3 days/week
    3. ______ less than once a week
    4. ______ only once, why? ______________________________

2. ______ no

c. The Summerville Shuttle from Clinton Avenue to Summerville?
1. ______ yes. How often do you use it?
    1. ______ 4-7 days/week
    2. ______ 1-3 days/week
    3. ______ less than once a week
    4. ______ only once, why? ______________________________

2. ______ no

8. How often do you use RTS buses?
1. ________ 4-7 days a week
2. ________ 1-3 days a week
3. ________ less than once/week
4. ________ do not use them anymore (skip to end)

What routes (streets or numbers)

____

____

____

Thank you very much for your time and co-operation!

Results of Irondequoit Former Fixed-Route Users Survey

	Former Fixed-Route			
	Route 5 (St. Paul)	Route 7 (Clinton)	Route 12 (Goodman)	Total
Type of Response	(n=85)	(n=82)	(n=27)	(n=194)
OK	72.9	47.6	81.5	63.4
Not Reached	12.9	29.3	11.1	19.6
Moved	7.1	14.6	7.4	10.3
Phone Disconnected	2.4	2.4	0.0	2.1
Wrong Info on Survey	4.7	3.7	0.0	3.6
Refused Interview	0.0	2.4	0.0	1.0
PERT Awareness	(n=62)	(n=39)	(n=22)	(n=123)
Aware of Changes	61.3	59.0	63.6	61.0
Not Aware of Changes	35.5	33.3	36.4	35.0
Not Sure	3.2	7.7	0.0	4.1
Desire to Travel on Same Route	(n=40)	(n=26)	(n=14)	(n=80)
Yes	92.5	96.2	92.9	93.8
No	7.5	3.8	7.1	6.3
Frequency of Desired Travel	(n=34)	(n=21)	(n=12)	(n=67)
4-7 Days/Week	35.3	47.6	83.3	47.8
1-3 Days/Week	50.0	38.1	16.7	40.3
Less Than Once/Week	14.7	14.3	0.0	11.9
Ability to Complete Trip	(n=37)	(n=25)	(n=14)	(n=76)
Yes	100.0	100.0	92.9	98.7
No	0.0	0.0	7.1	1.3
Major Mode Now Used	(n=37)	(n=25)	(n=13)	(n=75)
RTS in Peak	21.6	24.0	92.3	34.7
Other RTS Route	8.1	12.0	0.0	8.0
Summerville Shuttle	40.5	44.0	0.0	34.7
Dial-A-Bus	8.1	4.0	0.0	5.3
Loop Bus	0.0	0.0	7.7	1.3
Drove	8.1	8.0	0.0	6.7
Driven	10.8	8.0	0.0	8.0
Other	2.7	0.0	0.0	1.3

	Former Fixed Route			
	Route 5 (St. Paul)	Route 7 (Clinton)	Route 12 (Goodman)	Total
Other Modes Now Used	(n=11)	(n=10)	(n=5)	(n=26)
RTS in Peak	0.0	30.0	40.0	19.2
Other RTS Route	18.2	0.0	0.0	7.7
Summerville Shuttle	0.0	10.0	0.0	3.8
Dial-A-Bus	0.0	0.0	20.0	3.8
Loop Bus	9.1	0.0	20.0	7.7
Drove	0.0	20.0	20.0	11.5
Driven	72.7	30.0	0.0	42.3
Taxi	0.0	10.0	0.0	3.8
Transit Preference	(n=33)	(n=24)	(n=12)	(n=69)
New System Better	21.2	33.3	25.0	26.1
Old System Better	54.5	29.2	50.0	44.9
Same	24.2	37.5	25.0	29.0

Reasons for Preference for Respondents Using Transit as Major Mode*	Route 5 Prefer:		Route 7 Prefer:		Route 12 Prefer:		Total Prefer:	
	New (n=5)	Old (n=15)	New (n=5)	Old (n=7)	New (n=3)	Old (n=6)	New (n=13)	Old (n=28)
Speed	12	11	0	6	4	2	16	19
Reliability	0	12	9	3	6	15	15	30
Cost	0	1	0	0	0	2	0	3
Doorstop Service	2	4	0	0	0	0	2	4
Transferring	0	3	2	9	3	0	5	12
Enjoyment	2	9	6	0	1	0	9	9
Simplicity	1	4	0	0	0	0	1	4
Personal Service	2	2	0	0	2	0	4	2
Convenience	5	26	0	3	1	3	6	32
Scheduling	0	3	0	2	0	2	0	7

---

*Major Reason: 3 points, second reason = 2 points, third reason = 1 point

	Former Fixed Route			
	Route 5 (St. Paul)	Route 7 (Clinton)	Route 12 (Goodman)	Total
Use of Dial-A-Bus	(n=62)	(n=39)	(n=22)	(n=123)
4-7 Days/Week	1.6	0.0	0.0	0.8
1-3 Days/Week	3.2	2.6	9.1	4.1
Less than Once/Week	9.5	2.6	4.6	6.5
Only Once	3.2	5.1	0.0	3.3
Never	82.3	89.7	86.4	85.4
Use of Loop Bus	(n=62)	(n=39)	(n=22)	(n=123)
4-7 Days/Week	0.0	0.0	4.6	0.8
1-3 Days/Week	3.2	5.1	4.6	4.1
Less than Once/Week	3.2	7.7	4.6	4.9
Only Once	1.6	7.7	0.0	4.1
Never	91.9	79.5	86.4	87.0
Use of Summerville Shuttle	(n=61)	(n=39)	(n=22)	(n=122)
4-7 Days/Week	14.8	5.1	0.0	9.0
1-3 Days/Week	21.3	15.4	0.0	15.6
Less than Once/Week	19.7	12.8	4.6	14.8
Only Once	6.6	5.1	0.0	4.9
Never	37.7	61.5	95.5	55.7
Use of RTS Buses	(n=61)	(n=39)	(n=22)	(n=122)
4-7 Days/Week	45.9	48.7	54.5	48.3
1-3 Days/Week	21.3	15.4	18.2	18.9
Less Than Once/Week	18,0	28.2	9.1	19.7
Use No Longer	14.8	7.7	18.2	13.1
Major RTS Route Used	(n=49)	(n=35)	(n=18)	(n=102)
5	57.1	17.1	5.6	34.3
7	2.0	71.4	0.0	25.5
9	2.0	2.9	0.0	2.0
10	6.1	5.7	11.1	6.9
12	2.0	0.0	77.8	14.7
19	0.0	0.0	5.6	1.0
Any Bus	30.6	2.9	0.0	15.7

APPENDIX A.12

AUGUST 19, 1976 AND DECEMBER 1976 DIAL-A-BUS ON-BOARD SURVEYS (IRONDEQUOIT)

(August 1976)

DO NOT
WRITE IN
THIS SPACE

PASS. ID # ______
INTERVIEWER ______
DATE ______

PT # ______
TIME ON ______ a
TIME OFF ______ p

1. Where did you board this PERT Dial-a-Bus?
   1. ( ) Dewey and Ridge
   2. ( ) Clinton Loop
   3. ( ) Some other location?
      What address? ______

FOR DEWEY AND RIDGE AND CLINTON LOOP BOARDERS

1a. How did you get to this PERT Dial-a-Bus?
   1. ( ) RTS Bus, what Route? ______
   2. ( ) Drove myself
   3. ( ) Driven by someone
   4. ( ) Walked
   5. ( ) Taxi
   6. ( ) Other, how? ______

1b. How did you contact PERT Dial-a-Bus to book a trip?
   1. ( ) Telephoned from downtown
   2. ( ) Telephoned from home
   3. ( ) Telephoned from transfer point
   4. ( ) Notified RTS Bus Driver
   5. ( ) Other, how? ______

1c. About how many minutes did you wait for PERT Dial-a-Bus to pick you up?
   ______ minutes

FOR OTHER BOARDERS

1d. In arranging for this PERT Dial-a-Bus trip, did you telephone for service as soon as possible, or did you telephone earlier and request service for a particular time?
   1. ( ) As soon as possible
      How long were you told you would have to wait? ______ minutes
      How long did you actually wait? ______ minutes
   2. ( ) Particular time.
      Was the bus:
      1. ( ) Early
      2. ( ) On Time
      3. ( ) Late
      By how many minutes was it late or early? ______

2. Where are you going on this trip?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or dental appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, where? ______

3. Where are you coming from?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or Dental Appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, Where? ______

4. How many automobiles are owned or operated by members of your household? ______ cars.

5. Do you have a valid driver's license?
   1. ( ) Yes
   2. ( ) No

6. Was there an automobile available for you to drive, or be driven in, for this trip?
   1. ( ) Yes, without inconvenience to others
   2. ( ) Yes, with inconvenience to others
   3. ( ) No

7. Your age:
   1. ( ) Under 20
   2. ( ) 20-44
   3. ( ) 45-64
   4. ( ) 65 or over

8. Are you:
   1. ( ) Male
   2. ( ) Female

9. Are you a:
   1. ( ) Student
   2. ( ) Homemaker
   3. ( ) Retiree
   4. ( ) Employed
   5. ( ) Self-employed
   6. ( ) Other, what? ______

10. If PERT Dial-a-Bus were not available, how would you have made this trip?
   1. ( ) Could not have made this trip
   2. ( ) RTS bus, what route? ______
   3. ( ) Drove myself
   4. ( ) Driven by someone
   5. ( ) Walk
   6. ( ) Taxi
   7. ( ) Other, how? ______

(August 1976)

11. How do you do most of your local travelling?
    1. ( ) PERT Dial-a-Bus
    2. ( ) RTS Buses
    3. ( ) Drive myself
    4. ( ) Driven by someone
    5. ( ) Walk
    6. ( ) Taxi
    7. ( ) Other, how? ____________________

12. Comparing PERT Dial-a-Bus to the kind of transportation you checked above in question 11, how would you rate PERT service in terms of:

	MUCH BETTER	SOMEWHAT BETTER	ABOUT THE SAME	SOMEWHAT WORSE	MUCH WORSE
A. Convenience to use	( )	( )	( )	( )	( )
B. Speed of reaching your destination	( )	( )	( )	( )	( )
C. Comfort	( )	( )	( )	( )	( )
D. Safety	( )	( )	( )	( )	( )
E. Cost	( )	( )	( )	( )	( )
F. Predictability of service from one day to the next	( )	( )	( )	( )	( )

13. There are 7 different kinds of small PERT buses, how does this one compare to the rest?
    1. ( ) The best kind
    2. ( ) Better than most
    3. ( ) Average
    4. ( ) Worse than most
    5. ( ) The worst kind

14. Are you using PERT Dial-a-Bus both going to and coming from your destination today?
    1. ( ) Yes
    2. ( ) No, What other method of transportation was, or will be, used for your trip in the other direction?
        1. ( ) Bus only, what route?
        2. ( ) Drove myself
        3. ( ) Driven by someone
        4. ( ) Walk
        5. ( ) Taxi
        6. ( ) Other, How? ____________________

15. Are you travelling alone or with other people (including small children), this trip?
    1. ( ) Alone
    2. ( ) With other people, how many? ______________

16. How often do you use PERT Dial-a-Bus?
    1. ( ) 3 to 6 days a week
    2. ( ) 1 to 2 days a week
    3. ( ) 1 to 3 days a month
    4. ( ) Less than once a month

17. How often do you use RTS buses?
    1. ( ) 3 to 6 days a week
    2. ( ) 1 to 2 days a week
    3. ( ) 1 to 3 days a month
    4. ( ) Less than once a month
    5. ( ) Never

18. When did you first ride PERT Dial-a-Bus?
    1. ( ) Today
    2. ( ) This month
    3. ( ) July or June
    4. ( ) April or May

19. How did you happen to ride PERT Dial-a-Bus for the first time? ____________________

____

20. Where did you get most of your information on PERT?
    1. ( ) Information in the mail
    2. ( ) Newspaper advertisements
    3. ( ) Radio and TV
    4. ( ) Telephoning PERT
    5. ( ) From bus drivers
    6. ( ) At work
    7. ( ) From friends or family
    8. ( ) Other, how? ______________

Please use the additional space to give us whatever suggestions and comments you would like to add. We are especially interested in ways to improve service.

____

____

____

Your Name: ____

(December 1976)

DO NOT
WRITE IN
THIS SPACE

PASS. ID # ____________
INTERVIEWER ____________
DATE ____________

PT # ____________
TIME ON ____________ a
p
TIME OFF ____________

1. Where did you board this PERT Dial-a-Bus?
   1. ( ) Dewey and Ridge
   2. ( ) Clinton Loop
   3. ( ) Some other location?
      What address? ____________

FOR DEWEY AND RIDGE AND CLINTON LOOP BOARDERS

1a. How did you get to this PERT Dial-a-Bus?
   1. ( ) RTS Bus, what Route? ____________
   2. ( ) Drove myself
   3. ( ) Driven by someone
   4. ( ) Walked
   5. ( ) Taxi
   6. ( ) Other, how? ____________

1b. How did you contact PERT Dial-a-Bus to book a trip?
   1. ( ) Telephoned from downtown
   2. ( ) Telephoned from home
   3. ( ) Telephoned from transfer point
   4. ( ) Notified RTS Bus Driver
   5. ( ) Other, how? ____________

1c. About how many minutes did you wait for PERT Dial-a-Bus to pick you up?
   ____________ minutes

FOR OTHER BOARDERS

1d. In arranging for this PERT Dial-a-Bus trip, did you telephone for service as soon as possible, or did you telephone earlier and request service for a particular time?
   1. ( ) As soon as possible
      How long were you told you would have to wait? ____________ minutes
      How long did you actually wait? ____________ minutes
   2. ( ) Particular time.
      Was the bus:
      1. ( ) Early
      2. ( ) On Time
      3. ( ) Late
      By how many minutes was it late or early? ____________

2. Where are you going on this trip?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or dental appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, where? ____________

3. Where are you coming from?
   1. ( ) Work
   2. ( ) School
   3. ( ) Recreational activity
   4. ( ) Store
   5. ( ) Medical or Dental Appointment
   6. ( ) Visiting
   7. ( ) Home
   8. ( ) Other, Where? ____________

4. How many automobiles are owned or operated by members of your household? ________ cars.

5. Do you have a valid driver's license?
   1. ( ) Yes
   2. ( ) No

6. Was there an automobile available for you to drive, or be driven in, for this trip?
   1. ( ) Yes, without inconvenience to others
   2. ( ) Yes, with inconvenience to others
   3. ( ) No

7. Your age:
   1. ( ) Under 20
   2. ( ) 20-44
   3. ( ) 45-64
   4. ( ) 65 or over

8. Are you:
   1. ( ) Male
   2. ( ) Female

9. Are you a:
   1. ( ) Student
   2. ( ) Homemaker
   3. ( ) Retiree
   4. ( ) Employed
   5. ( ) Self-employed
   6. ( ) Other, what? ____________

10. If PERT Dial-a-Bus were not available, how would you have made this trip?
   1. ( ) Could not have made this trip
   2. ( ) RTS bus, what route? ____________
   3. ( ) Drove myself
   4. ( ) Driven by someone
   5. ( ) Walk
   6. ( ) Taxi
   7. ( ) Other, how? ____________

(December 1976)

11. How do you do most of your local travelling?
    1. ( ) PERT Dial-a-Bus
    2. ( ) RTS Buses
    3. ( ) Drive myself
    4. ( ) Driven by someone
    5. ( ) Walk
    6. ( ) Taxi
    7. ( ) Other, how? ______________________________

12. Comparing PERT Dial-a-Bus to the kind of transportation you checked above in question 11, how would you rate PERT service in terms of:

	MUCH BETTER	SOMEWHAT BETTER	ABOUT THE SAME	SOMEWHAT WORSE	MUCH WORSE
A. Convenience to use	( )	( )	( )	( )	( )
B. Speed of reaching your destination	( )	( )	( )	( )	( )
C. Comfort	( )	( )	( )	( )	( )
D. Safety	( )	( )	( )	( )	( )
E. Cost	( )	( )	( )	( )	( )
F. Predictability of service from one day to the next	( )	( )	( )	( )	( )

13. Would you prefer to pay the fare you just paid now, or a flat fare of $1.25(half fare for senior citizens)?

    1. ( ) Yes, the current fare
    2. ( ) No, a flat fare

14. Are you using PERT Dial-a-Bus both going to and coming from your destination today?
    1. ( ) Yes
    2. ( ) No, What other method of transportation was, or will be, used for your trip in the other direction?
        1. ( ) Bus only, what route?
        2. ( ) Drove myself
        3. ( ) Driven by someone
        4. ( ) Walk
        5. ( ) Taxi
        6. ( ) Other, how? ______________________

15. Are you travelling alone or with other people (including small children), this trip?
    1. ( ) Alone
    2. ( ) With other people, how many? ______________

16. How often do you use PERT Dial-a-Bus?
    1. ( ) 3 to 6 days a week
    2. ( ) 1 to 2 days a week
    3. ( ) 1 to 3 days a month
    4. ( ) Less than once a month

17. How often do you use RTS buses?
    1. ( ) 3 to 6 days a week
    2. ( ) 1 to 2 days a week
    3. ( ) 1 to 3 days a month
    4. ( ) Less than once a month
    5. ( ) Never

18. When did you first ride PERT Dial-a-Bus?
    1. ( ) Today
    2. ( ) This month
    3. ( ) July or June
    4. ( ) April or May

19. How did you happen to ride PERT Dial-a-Bus for the first time? ____________________

____

20. Where did you get most of your information on PERT?
    1. ( ) Information in the mail
    2. ( ) Newspaper advertisements
    3. ( ) Radio and TV
    4. ( ) Telephoning PERT
    5. ( ) From bus drivers
    6. ( ) At work
    7. ( ) From friends or family
    8. ( ) Other, how? ____________________

Please use the additional space to give us whatever suggestions and comments you would like to add. We are especially interested in ways to improve service.

____

____

____

Your Name: ____

RESULTS OF IRONDEQUOIT DIAL-A-BUS ON-BOARD SURVEYS

OF AUGUST 1976 AND DECEMBER 1976

	August 1976	December 1976 Friday	December 1976 Saturday
I. USER CHARACTERISTICS			
Sex	(n=41)	(n=49)	(n=19)
Male	19.5	30.6	26.3
Female	80.5	69.4	73.7
Age	(n=42)	(n=51)	(n=19)
Under 20	31.0	9.8	26.3
20-44	28.6	41.2	10.5
45-64	14.3	31.4	21.1
65 and Over	26.2	17.6	42.1
Occupation	(n=38)	(n=51)	(n=19)
Student	21.1	7.8	15.8
Employed	21.1	52.9	15.8
Self-Employed	2.6	2.0	0.0
Retired	26.3	23.5	42.1
Homemaker	26.3	13.7	26.3
Unemployed and Other	2.6	--	--
Licensed Drivers	(n=39)	(n=49)	(n=19)
Licensed	33.3	46.9	10.5
Not Licensed	66.7	53.1	89.5
Automobiles in Household	(n=38)	(n=49)	(n=17)
0	44.7	34.7	58.8
1	15.8	40.8	29.4
2	31.6	20.4	11.8
3	7.9	4.1	0.0
II. TRIP CHARACTERISTICS			
Type of Trip	(n=36)	(n=36)	(n=17)
Immediate Request	55.6	50.0	64.7
Advance Request	44.4	50.0	35.3

II. TRIP CHARACTERISTICS (CONTINUED)

		December 1976	
	August 1976	Friday	Saturday
Passengers in Party	(n=45)	(n=50)	(n=19)
1	68.9	86.0	57.9
2	22.2	14.0	36.8
3	6.7	0.0	5.3
4 or more	2.2	--	--
Mean	1.44	1.14	1.47
Place Boarded	(n=43)	(n=43)	(n=22)
Dewey and Ridge	7.0	0.0	4.5
Clinton Loop	2.3	2.3	0.0
Other Locations	90.7	97.7	95.5
Trip Purpose (Non-Home-Based Trips Counted Twice)	(n=51)	(n=54)	(n=20)
Work	25.5	53.4	10.0
School	0.0	5.6	0.0
Medical	9.8	13.0	0.0
Shopping	29.4	14.8	50.0
Personal Visit	17.6	7.4	25.0
Recreation	11.8	0.0	10.0
Other	5.9	5.6	5.0
Round-Trip by Dial-A-Bus	(n=32)	(n=50)	(n=19)
Yes	50.0	56.0	63.2
No	50.0	44.0	36.8
Mode Used on Return Trip	(n=16)	(n=21)	(n=7)
RTS	12.5	19.0	0.0
Drive	6.3	0.0	0.0
Driven	68.8	66.7	100.0
Walk	6.3	--	--
Taxi	6.3	4.8	0.0
Loop Bus	0.0	9.5	0.0
Availability of Auto for Trip	(n=38)	(n=49)	(n=18)
Not Available	71.1	63.3	94.4
Available but Inconvenient for Others	23.7	10.2	0.0
Available and Convenient	5.3	26.5	5.6
Alternate Mode for Trip	(n=37)	(n=51)	(n=19)
No Trip	40.5	21.6	47.4
RTS	18.9	27.5	5.3
Drive	5.4	13.7	0.0
Driven	13.5	19.6	36.8
Walk	13.5	7.8	10.5
Taxi	8.1	5.9	0.0
Other	0.0	3.9	0.0

III. TRAVEL CHARACTERISTICS

	August 1976	December 1976	
		Friday	Saturday
Frequency of Dial-A-Bus Use	(n=32)	(n=47)	(n=17)
3-6 Days/Week	37.5	55.3	58.8
1-2 Days/Week	31.3	17.0	23.5
1-3 Days/Month	9.4	19.1	11.8
Less Than Once/Month	21.9	8.5	5.9
Never	--	--	--
Frequency of RTS Use	(n=31)	(n=48)	(n=18)
3-6 Days/Week	19.4	27.1	16.7
1-2 Days/Week	12.9	12.5	22.2
1-3 Days/Month	12.9	16.7	22.2
Less Than Once/Month	25.8	14.6	27.8
Never	29.0	29.2	11.1
Major Mode Used for Local Travel	(n=37)	(n=51)	(n=19)
PERT	29.7	15.7	47.4
RTS	24.3	29.4	15.8
Drive	16.2	25.5	0.0
Driven	24.3	27.5	26.3
Walk	2.7	2.0	10.5
Taxi	2.7	0.0	0.0
First Use of Dial-A-Bus	(n=28)	(n=38)	(n=16)
Today	10.7	5.3	12.5
This Month	3.6	5.3	6.3
1-2 Months Ago	39.3	26.3	18.8
Over 2 Months Ago	46.4	63.2	62.5
Reason Dial-A-Bus First Used	(n=21)	(n=28)	(n=10)
Curious	14.3	10.7	0.0
Recommendation	14.3	21.4	20.0
No Car	19.0	7.1	0.0
Promotion	14.3	25.0	50.0
"To Get Somewhere"	14.3	3.6	30.0
Route Rationalization	4.8	10.7	0.0
Improvement	0.0	10.7	0.0
With Someone	9.5	0.0	0.0
Other	9.5	10.7	0.0
Major Source of Information on DAB	(n=117)	(n=44)	(n=17)
Mailing	35.9	13.6	5.9
Newspaper Advertisement	14.5	9.1	41.2
Television	3.4	6.8	5.9
Telephoning PERT	14.5	18.2	5.9
PERT Bus Drivers	7.7	11.4	5.9
At Work	2.6	15.9	11.8
Friends and Family	18.8	22.7	17.6
Other	2.6	2.3	5.9

IV. ATTITUDES TOWARD DIAL-A-BUS

Perceptions of Dial-A-Bus Compared to Major Mode Used

1 = Much better
2 = Somewhat better
3 = Same
4 = Somewhat worse
5 = Much worse

	August 1976	December 1976 Friday	December 1976 Saturday
	(n=17-23)	(n=35-39)	(n=7-8)
Convenience	1.61	2.31	1.75
Safety	1.84	2.00	2.13
Comfort	1.90	2.13	2.25
Speed	2.18	2.54	2.63
Cost	2.06	2.69	2.57
Predictability	2.44	3.14	2.25

Fare System Preference		(n=48)	(n=19)
Prefer Zone Fare System		85.4	78.9
Prefer $1.25 Flat Fare		14.6	21.1

V. LEVEL OF SERVICE (Times in Minutes)

AUGUST 1976

A. Immediate Requests	Sample Size	Mean	Standard Deviation
Perceived Predicted Wait Time	16	14.5	14.2
Perceived Wait Time	18	16.7	21.0
Perceived Pick-Up Deviation	15	2.9	11.5
Surveyor-Recorded Ride Time	20	8.5	4.8
B. Advance Requests			
Perceived Pick-Up Deviation	16	3.8	7.4
Surveyor-Recorded Ride Time	16	11.3	5.2

DECEMBER 1976

A. Immediate Requests	Sample Size	Mean	Standard Deviation
Perceived Predicted Wait Time	27	21.9	13.8
Perceived Wait Time	27	24.3	19.0
Perceived Pick-Up Deviation	27	2.4	9.0
Surveyor-Recorded Ride Time	28	9.3	3.8
B. Advance Requests			
Perceived Pick-Up Deviation	24	5.4	11.4
Surveyor-Recorded Ride Time	22	8.8	4.1

APPENDIX A.13

APRIL 21, 1977 DIAL-A-BUS ON-BOARD ATTITUDINAL SURVEY (IRONDEQUOIT)

YOUR OPINIONS OF BUS TRAVEL

On the scales below, please indicate your general opinion of bus travel for journeys about Rochester. Base your opinion on what you have experienced or heard about local travel by each mode from the user's viewpoint.

To indicate your opinion, look at the descriptive scales below, each of which allows for a range of opinions on a particular characteristic, such as COMFORT. Then, mark what you consider to be the single most appropriate description on each scale by circling the relevant number. For instance, on the COMFORT scale, if you thought buses were a very comfortable for of travel for journeys in Rochester, you would circle "1" on the scale; however, if you thought they were a slightly uncomfortable form of travel, you would circle "4," and so forth.

TRAVEL CHARACTERISTICS	(Buses are:)	Very (1)	Slightly (2)	Neither or Both Equally (3)	Slightly (4)	Very (5)	(Buses are:)
COST OF TRAVEL	Inexpensive	1	2	3	4	5	Expensive
ENJOYABLENESS	Enjoyable Form of Travel	1	2	3	4	5	Unenjoyable
SPEED.	Fast	1	2	3	4	5	Slow
CONVENIENCE	Convenient Form of Travel	1	2	3	4	5	Inconvenient
STATUS	High Status Form of Travel	1	2	3	4	5	Low Status
COMFORT (Seats, Ride, etc.)	Comfortable	1	2	3	4	5	Uncomfortable
MODERNITY	Modern Form of Travel	1	2	3	4	5	Old-fashioned
SAFETY	Safe Form of Travel	1	2	3	4	5	Dangerous Form
SIMPLICITY	Simple to Use	1	2	3	4	5	Complicated
PUNCTUALITY	Provide On-Time Arrivals	1	2	3	4	5	Provide Late Arrivals
NOISE	Quiet	1	2	3	4	5	Noisy

YOUR RANKING OF THE RELATIVE IMPORTANCE OF THE DIFFERENT TRAVEL CHARACTERISTICS

Listed below are the set of travel characteristics which appeared in the previous question. As on the previous question, please circle the answer that describes how important that characteristic is in your decision to use a car or bus for local travel.

	Unimportant or Don't Consider It	Moderately Important	Very Important
Cost of Travel	1	2	3
Enjoyment	1	2	3
Convenience	1	2	3
Status	1	2	3
Speed	1	2	3
Comfort (seats, noise, ride, etc.)	1	2	3
Modernity	1	2	3
Safety	1	2	3
Simplicity	1	2	3
Punctuality	1	2	3
Noise	1	2	3

Thank you for your cooperation and time.

Results of Irondequoit Dial-A-Bus Attitudinal On-Board Survey

of April 17, 1977

Attitudes Toward Bus Travel

(n=36-40)

(1) →	(5)	Mean	Standard Deviation
Inexpensive	Expensive	1.93	1.07
Enjoyable	Unenjoyable	1.65	0.98
Fast	Slow	1.85	1.01
Convenient	Inconvenient	1.40	0.87
High Status	Low Status	1.69	0.92
Comfortable	Uncomfortable	1.45	0.99
Modern	Old-Fashioned	1.49	0.91
Safe	Dangerous	1.41	0.94
Simple	Complicated	1.67	1.22
On-Time	Late	1.90	1.23
Quiet	Noisy	1.72	1.26

Importance of Travel Characteristics

(n=32-36)

	Mean	Standard Deviation
Cost of Travel	2.20	0.76
Enjoyment	2.34	0.82
Convenience	2.61	0.73
Status	2.09	0.89
Speed	2.59	0.66
Comfort	2.24	0.74
Modernity	2.21	0.78
Safety	2.79	0.54
Simplicity	2.36	0.78
Punctuality	2.85	0.44
Noise	2.03	0.87

APPENDIX A.14

NOVEMBER 1976 LOOP BUS ON-BOARD SURVEY (IRONDEQUOIT)

DO NOT ________ SURVEYOR
WRITE IN ________ PT. #
THIS SPACE ________ TIME

1. Are you:

1. ________ male 2. ________ female

2. Your age is:

1. ________ Under 20 3. ________ 45-64
2. ________ 20-44 4. ________ 65 or over

3. Do you have a valid driver's license?

1. ______ yes 2. ______ no

4. Are you:

1. ______ a student 4. ______ employed
2. ______ a home maker 5. ______ self-employed
3. ______ retired 6. ______ other, what? ________

5. What is the highest level of schooling you have completed?

1. ______ Grade school 4. ______ Some college
2. ______ Some high school 5. ______ College graduate
3. ______ High school graduate 6. ______ Graduate school

6. Where did your trip begin?

____
(address) (city)

7. What is the final destination of your trip?

____
(address) (city)

8. What is the reason for your trip?

1. ______work
2. ______school
3. ______shopping
4. ______medical dental
5. ______personal visit
6. ______recreation
7. ______personal business
8. ______other, what? ______

9. How would you have made this trip if this bus wasn't running?

1. ______I wouldn't go
2. ______Drive myself
3. ______Be driven by someone
4. ______Use RTS bus, what route? ______
5. ______Walk or bicycle
6. ______Taxi
7. ______Other, what? ______

10. Are you using a bus for a round trip, both going and coming today?

1. ______yes
2. ______no

11. How many cars are used by members of your household?

______cars

12. Was there an automobile available for you to drive, or be driven in, for this trip?

1. ______No
2. ______Yes, with inconvenience to others
3. ______Yes, without inconvenience to others.

13. Check all of the following features of this bus service that you are not satisfied with. If you feel everyting is satisfactory, check "all OK" at the bottom.

______Getting to or from the bus stop

______Waiting for the bus (too long wait)

______Getting on and off the bus

______Lack of privacy (like in a car)

______Courtesy and helpfulness of the drivers

______Speed of the ride

______Comfort of the ride

______Cost of the bus ride

______Number of transfers to get where you're going

______Bus schedule (buses don't run whe you need them)

______All O.K.

14. How often do you use the following buses: (check appropriate column)

	4-7 days/week	1-3 days/week	Less than once/week	Never used it
Dial-A-Bus	______	______	______	______
The Summerville Shuttle	______	______	______	______
The Irondequoit Loop Bus	______	______	______	______
Regular RTS bus serivce	______	______	______	______
Urban PERT night bus service	______	______	______	______

15. How did you get to this bus?

_____Transferred from a PERT Dial-a-Bus
_____Transferred from the Summerville Shuttle
_____Transferred from an RTS bus. Which route? __________
_____Walked
_____Drove to bus stop
_____Was driven to bus stop
_____Taxi
_____Other, how? ______________________________

16. How will you get to your destination from this bus?

_____Transferred from a PERT Dial-a-Bus
_____Transferred from the Summerville Shuttle
_____Transferred from an RTS bus. Which route? ________
_____Walked
_____Drove to bus stop
_____Was driven to bus stop
_____Taxi
_____Other, how? ______________________________

So that we may contact you for a follow-up survey, please fill in below.

Name ____

Address ____

Telephone ____

YOUR OPINIONS OF BUS TRAVEL

On the scales below, please indicate your general opinion of bus travel in Rochester. Base your opinion on what you have experienced or heard about local but travel from the user's viewpoint.

To indicate your opinion, look at the descritive scales below, each of which allows for a range of opinions on a particular characteristic, such as COMFORT. Then, mark what you consider to be the single most appropriate description on each scale by circling the relevant number. For instance, on the COMFORT scale, if you thought buses were a very comforatable form of travel for journeys in Rochester, you would circle "1" on the scale; however, if you thought that were a slightly uncomfortable form of travel, you would circle "4", and so forth.

		Very	Slightly	Neither or Both Equally	Slightly	Very	
TRAVEL CHARACTERISTICS	(Buses are:)	(1)	(2)	(3)	(4)	(5)	(Buses are
COST OF TRAVEL	Inexpensive	1	2	3	4	5	Expensive
ENJOYMENT	Enjoyable Form of Travel	1	2	3	4	5	Unenjoyable
SPEED	Fast	1	2	3	4	5	Slow
CONVENIENCE	Convenient Form of Travel	1	2	3	4	5	Inconvenience
STATUS	High Status Form of Travel	1	2	3	4	5	Low Stutus
COMFORT (Seats, Ride, etc.)	Comfortable	1	2	3	4	5	Uncomfortable
MODERNITY	Modern Form of Travel	1	2	3	4	5	Old-fashione
SAFETY	Safe Form of Travel	1	2	3	4	5	Dangerou Form
SIMPLICITY	Simple to Use	1	2	3	4	5	Complicated
PUNCTUALITY	Provide On-Time Arrivals	1	2	3	4	5	Provide Arrivals
NOISE	Quiet	1	2	3	4	5	Noisy

YOUR RANKING OF THE RELATIVE IMPORTANCE OF THE DIFFERENT TRAVEL CHARACTERISTICS

Listed below are the set of travel characteristics which appeared in the previous question. As on the previous question, please circle the answer that describes how important that characteristic is in your decision to use a car or bus for local travel.

	Unimportant or Don't Consider It	Moderately Important	Very Important
Cost of Travel	1	2	3
Enjoyment	1	2	3
Convenience	1	2	3
Status	1	2	3
Speed	1	2	3
Comfort (seats, noise, ride, etc.)	1	2	3
Modernity	1	2	3
Safety	1	2	3
Simplicity	1	2	3
Punctuality	1	2	3
Noise	1	2	3

Thank you for your cooperation and time.

Results of Irondequoit Loop Survey of November 1976

I. USER CHARACTERISTICS

Sex	(n=12)
Male	25.0
Female	75.0

Age	(n=12)
Under 20	8.3
20-44	8.3
45-64	25.0
Over 65	58.3

Occupation	(n=12)
Student	8.3
Employed	8.3
Homemaker	16.7
Retired	66.7

Licensed Drivers	(n=12)
Licensed	41.7
Not Licensed	58.3

Educational Background	(n=12)
Grade School	25.0
Some High School	16.7
High School Graduate	50.0
Some Graduate School	8.3

Automobiles in Household	(n=11)
0	45.5
1	36.4
2	18.2

II. TRIP CHARACTERISTICS

Time Boarded Loop Bus	(n=20)
10-11 AM	30.0
11-12 AM	5.0
12-1 PM	10.0
1-2 PM	40.0
2-3 PM	10.0
3-4 PM	5.0

II. TRIP CHARACTERISTICS (CONTINUED)

Trip Purpose	(n=11)
Work	27.3
Shopping	63.6
Recreation	9.1

Round Trip By Transit	(n=11)
Yes	90.9
No	9.1

Auto Availability for Trip	(n=11)
No Auto Available	90.9
Available and Convenient	9.1

Alternative Mode for Trip	(n=11)
No Trip	18.2
Drive	9.1
Driven	36.4
RTS Bus	18.2
Walk	18.2

Access Mode	(n=12)
RTS	8.3
Walk	91.7

Egress Mode	(n=12)
Walk	100.0

III. TRAVEL CHARACTERISTICS

Use of Alternative Transit Modes

	Loop Bus (n=12)	DAB (n=12)	Summerville Shuttle (n=12)	RTS (n=12)	Urban PERT (n=12)
4-7 Days/Week	16.7	16.7	--	--	--
1-3 Days/Week	83.3	8.3	--	25.0	--
Less than Once/Week	--	--	--	--	--
Never	--	75.0	100.0	75.0	100.0

IV. ATTITUDES

Perceived Problems (Percent of Respondents Checking Each Problem; n=11)

Getting to/from bus stop	0.0
Waiting for bus	9.1
Getting on/off bus	0.0
Lack of privacy	0.0
Courtesy/helpfulness of drivers	0.0
Speed	0.0
Comfort	0.0
Cost	0.0
Number of transfers	9.1
Bus scheduling	0.0
All Satisfactory	90.9

Attitudes Toward Bus Travel

(n=3-8)

(1) ⟶	(5)	Mean	Standard Deviation
Simple	Complicated	1.00	0.00
Safe	Dangerous	1.25	0.71
Convenient	Inconvenient	1.38	1.06
Inexpensive	Expensive	1.38	0.74
Modern	Old-Fashioned	1.00	0.00
Enjoyable	Unenjoyable	1.50	0.76
Quiet	Noisy	3.88	1.55
On-Time	Late	1.63	1.06
Fast	Slow	2.00	1.20
Comfortable	Uncomfortable	1.50	0.54
High Status	Low Status	2.33	2.31

Importance of Travel Characteristics

(3) Very Important; (2) Moderately Important; (1) Unimportant; n=21-24)

	Mean	Standard Deviation	Mean	Standard Deviation
Safety	2.57	0.79	2.63	0.58
Convenience	2.71	0.76	2.75	0.44
Punctuality	2.50	0.84	2.75	0.53
Cost	2.29	0.95	2.42	0.72
Speed	1.80	1.10	2.25	0.53
Comfort	2.00	0.82	1.88	0.54
Simplicity	2.00	0.89	2.25	0.79
Enjoyment	1.83	0.75	1.57	0.51
Modernity	1.33	0.52	1.52	0.59
Status	1.40	0.89	1.08	0.28
Noise	2.17	0.98	1.63	0.58

APPENDIX A.15

SUMMERVILLE SHUTTLE ON-BOARD SURVEYS (IRONDEQUOIT)

AUGUST 19, 1976 AND NOVEMBER 17, 1976

(August 1976)

DO NOT WRITE IN THIS SPACE	INTERVIEWER ________	TIME ON ________
	DATE ________	TIME OFF ________

Summerville Shuttle Questionnaire

1. At what bus stop did you get on this bus?

____
nearest intersection

2. How did you get to this bus?
   1. ( ) Transferred from RTS
   2. ( ) Transferred from PERT
   3. ( ) Walked ________ no. of blocks
   4. ( ) Drove to bus stop
   5. ( ) Was driven to bus stop
   6. ( ) Other, how? ________________

3. How long were you travelling to get to this bus stop? ___ ___ minutes

4. How long did you wait for this bus? ______ minutes

5. Where will you get off this bus? ________________ nearest corner

6. How will you get to your destination from this bus?
   1. ( ) Transfer to PERT bus
   2. ( ) Transfer to RTS ______ route no.
   3. ( ) Walk ________ no. of blocks
   4. ( ) Drive my car
   5. ( ) Will be driven in a car
   6. ( ) Other, how? ________________

7. What is the main purpose of your trip?
   1. ( ) Work
   2. ( ) Shopping
   3. ( ) School
   4. ( ) Recreational activity
   5. ( ) Medical
   6. ( ) Visiting
   7. ( ) Other, what? ________________

8. If the main purpose of your trip is work, at what time do you start work? ______
   At what time do you finish? ____________
   Are these regular hours? ________

9. How often do you ride this bus?
   1. ( ) 4-7 days a week
   2. ( ) 1-3 days a week
   3. ( ) Less than 4 days/month

10. Do you ever use the option of having the bus make a deviation from its route?
    1. ( ) Yes, how often? ________ to where? ____________
    2. ( ) No, why not? ________________________

11. Are you travelling alone or with other people (including small children) this trip?
    1. ( ) Alone
    2. ( ) With other people, how many? ____________

(August 1976)

12. Are you:
1. ( ) Employed
2. ( ) a Student
3. ( ) Retired
4. ( ) A homemaker
5. ( ) Self-employed
6. ( ) Other, what? ____________________

13. Was there a car available for this trip?
1. ( ) No
2. ( ) Yes, with inconvenience to others
3. ( ) Yes, without inconvenience to others

14. Your age:
1. ( ) Under 20
2. ( ) 20-44
3. ( ) 45-64
4. ( ) 65 or over

15. Are you:
1. ( ) Female
2. ( ) Male

16. Do you have a valid driver's license?
1. ( ) Yes
2. ( ) No

Name ____

Address ______________________________________

Do you have any suggestions or comments on PERT service? We are especially interested in ways to improve service.

PERT Summerville Shuttle Survey - November 17, 1976

1. Are you:

1.____Female   2.____Male

2. Your age is:

1.____Under 20   3.____45-64
2.____20-44   4.____65 or over

3. Do you have a valid driver's license?

1.____Yes   2.____No

4. Are you:

1.____a student   4.____employed
2.____a home maker   5.____self-employed
3.____retired   6.____other, what?____________________

5. Where did your trip begin? ______________________________
(address or nearest intersection)

6. What is the final destination of your trip?

____
(address or nearest intersection)

7. Before the Summerville Shuttle began operating, did you ride the RTS bus routes in Irondequoit?

1.____No
2.____Yes, how often?______________________________
Which route?________________________

8. What is the reason for your trip?

1. __________work
2. __________school
3. __________shopping
4. __________medical dental
5. __________personal visit
6. __________recreation
7. __________personal business
8. __________other, what? ________________

9. How would you have made this trip if this bus wasn't running?

1. _______I wouldn't go
2. _______Drive myself
3. _______Be driven by someone
4. _______Use RTS bus, what route? ________________
5. ______Walk or bicycle
6. ______Taxi
7. ______Other, what? ____________________

10. Are you using a bus for a round trip, both going and coming today?

1. __________yes
2. __________no

11. How many cars are used by members of your household?

______________cars

12. Was there an automobile available for you to drive, or be driven in, for this trip?

1. ______No
2. ______Yes, with inconvenience to others
3. ______Yes, without inconvenience to others.

13. Check all of the following features of this bus service that you are not satisfied with. If you feel everyting is satisfactory, check "all OK" at the bottom.

_____Getting to or from the bus stop

_____Waiting for the bus (too long wait)

_____Getting on and off the bus

_____Lack of privacy (like in a car)

_____Courtesy and helpfulness of the drivers

_______Speed of the ride

_______Comfort of the ride

_______Cost of the bus ride

_______Number of transfers to get where you're going

_______Bus schedule (buses don't run whe you need them)

_______All O.K.

14. How often do you use the following buses: (check appropriate column)

	4-7 days/week	1-3 days/week	Less than once/week	Never used it
Dial-A-Bus	_____	_____	_____	_____
The Summerville Shuttle	_____	_____	_____	_____
The Irondequoit Loop Bus	_____	_____	_____	_____
Regular RTS bus serivce	_____	_____	_____	_____
Urban PERT night bus service	_____	_____	_____	_____

15. How did you get to this bus?

_____Transferred from a PERT Dial-a-Bus
_____Transferred from the Irodequoit Loop
_____Transferred from an RTS bus. Which route? __________
_____Walked
_____Drove to bus stop
_____Was driven to bus stop
_____Taxi
_____Other, how? ______________________________

16. How will you get to your destination from this bus?

_____Transferred from a PERT Dial-a-Bus
_____Transferred from the Irondequoit Loop
_____Transferred from an RTS bus. Which route? __________
_____Walked
_____Drove to bus stop
_____Was driven to bus stop
_____Taxi
_____Other, how? ______________________________

So that we may contact you for a follow-up survey, please fill in below.

Name ____
Address ____
Telephone ____

YOUR OPINIONS OF BUS TRAVEL

On the scales below, please indicate your general opinion of bus travel in Rochester. Base your opinion on what you have experienced or heard about local but travel from the user's viewpoint.

To indicate your opinion, look at the descritive scales below, each of which allows for a range of opinions on a particular characteristic, such as COMFORT. Then, mark what you consider to be the single most appropriate description on each scale by circling the relevant number. For instance, on the COMFORT scale, if you thought buses were a very comforatable form of travel for journeys in Rochester, you would circle "1" on the scale; however, if you thought that were a slightly uncomfortable form of travel, you would circle "4", and so forth.

		Very	Slightly	Neither or Both Equally	Slightly	Very	
TRAVEL CHARACTERISTICS	(Buses are:)	(1)	(2)	(3)	(4)	(5)	(Buses are
COST OF TRAVEL	Inexpensive	1	2	3	4	5	Exoensive
ENJOYMENT	Enjoyable Form of Travel	1	2	3	4	5	Unenjoyable
SPEED	Fast	1	2	3	4	5	Slow
CONVENIENCE	Convenient Form of Travel	1	2	3	4	5	Inconvenience
STATUS	High Status Form of Travel	1	2	3	4	5	Low Stutus
COMFORT (Seats, Ride, etc.)	Comfortable	1	2	3	4	5	Uncomfortable
MODERNITY	Modern Form of Travel	1	2	3	4	5	Old-fashioned
SAFETY	Safe Form of Travel	1	2	3	4	5	Dangerous Form
SIMPLICITY	Simple to Use	1	2	3	4	5	Complicated
PUNCTUALITY	Provide On-Time Arrivals	1	2	3	4	5	Provide L Arrivals
NOISE	Quiet	1	2	3	4	5	Noisy

YOUR RANKING OF THE RELATIVE IMPORTANCE OF THE DIFFERENT TRAVEL CHARACTERISTICS

Listed below are the set of travel characteristics which appeared in the previous question. As on the previous question, please circle the answer that describes how important that characteristic is in your decision to use a car or bus for local travel.

	Unimportant or Don't Consider It	Moderately Important	Very Important
Cost of Travel	1	2	3
Enjoyment	1	2	3
Convenience	1	2	3
Status	1	2	3
Speed	1	2	3
Comfort (seats, noise, ride, etc.)	1	2	3
Modernity	1	2	3
Safety	1	2	3
Simplicity	1	2	3
Punctuality	1	2	3
Noise	1	2	3

Thank you for your cooperation and time.

Results of Summerville Shuttle Surveys

of August 19, 1976 and November 17, 1976

	Adjusted Percent August 19, 1976	 November 17, 1976
I. USER CHARACTERISTICS		
Sex	(n=86)	(n=86)
Male	33.7	43.0
Female	66.3	57.0
Age	(n=87)	(n=85)
Under 20	29.9	42.4
20-44	40.2	25.9
45-64	17.2	11.8
65 and Over	12.6	20.0
Occupation	(n=89)	(n=87)
Student	28.1	43.7
Employed	36.0	23.0
Self-Employed	4.5	4.6
Retired	12.4	16.1
Homemaker	13.5	9.2
Unemployed	5.6	3.4
Licensed Drivers	(n=85)	(n=86)
Licensed	44.7	47.7
Not Licensed	55.3	52.3
Automobiles in Household		(n=90)
0		30.0
1		32.2
2		25.6
3 or more		12.2
Mean		1.27 cars

II. TRIP CHARACTERISTICS

Time Boarded Summerville Shuttle	(n=94)
9-10 AM	11.7
10-11 AM	11.7
11-12 AM	13.8
12-1 PM	20.2
1-2 PM	25.5
2-3 PM	3.2
6-7 PM	3.2
7-8 PM	7.4
8-9 PM	3.2

II. TRIP CHARACTERISTICS (CONTINUED)

	Adjusted Percent	
	August 19, 1976	November 17, 1976
Passengers in Party	(n=92)	
1	78.3	
2	14.1	
3	5.4	
4 or more	2.2	
Mean	1.38 passengers	
Direction of Travel		(n=87)
Inbound (to CBD)		63.2
Outbound (from CBD)		36.8
Trip Length		(n=85)
Local (no transfer)		20.0
Non-Local (transfer)		80.0
Access Mode	(n=90)	(n=81)
RTS	50.0	35.8
PERT	1.1	1.2
Walk	47.8	63.0
Driven	1.1	0.0
Blocks Walked to Bus	(n=37)	
1	59.5	
2	21.6	
3	13.5	
4 or more	5.4	
Mean	1.8 blocks	
Perceived Access Time	(n=89)	
0.5 minutes	39.3	
6-10 minutes	21.4	
11-15 minutes	18.0	
16-20 minutes	16.9	
More than 20 minutes	4.5	
Mean	11.1 min.	
Standard Deviation	9.6 min.	
Perceived Wait Time	(n=73)	
0.5 minutes	60.3	
6-10 minutes	20.6	
11-15 minutes	12.3	
16-20 minutes	1.4	
Over 20 minutes	5.5	
Mean	8.0 min.	
Standard Deviation	7.6 min.	

II. TRIP CHARACTERISTICS (CONTINUED)

	Adjusted Percent	
	August 19, 1976	November 17, 1976
Time On-Board Bus (Actual Ride Time)	(n=31)	
Less than 10 minutes	22.6	
10-19 minutes	45.2	
20-29 minutes	29.0	
30 minutes and more	3.2	
Mean	16.8 min.	
Standard deviation	8.0 min.	
Egress Mode	(n=91)	(n=81)
RTS	37.4	39.5
PERT	4.4	4.9
Walk	57.1	55.6
Drive	1.1	0.0
Blocks Walked From Bus	(n=44)	
1	61.4	
2	11.4	
3	13.6	
4 or more	13.6	
Mean	2.2 blocks	
Trip Purpose	(n=89)	(n=76)
Work	40.4	30.3
School	2.2	38.2
Medical	5.6	5.3
Shopping	24.7	10.5
Recreation	11.2	5.3
Personel visit	10.1	5.3
Personal business	--	5.3
Other	5.6	0.0
Round Trip by Transit		(n=75)
Yes		73.3
No		26.7
Use of Route Deviation Option	(n=73)	
4-7 days/week	1.4	
Less than once/week	2.7	
Used only once	1.4	
Never used	94.5	
Auto Available for Trip	(n=84)	(n=78)
Not available	76.2	69.2
Available but inconvenient for others	14.3	23.1
Available and convenient	9.5	7.7

II. TRIP CHARACTERISTICS (CONTINUED)

	Adjusted Percent August 19, 1976	Adjusted Percent November 17, 1976
Alternate Mode for Trip		(n=79)
No trip		11.4
Drive		11.4
Driven		35.4
RTS		13.9
Walk		11.4
Taxi		2.5
Schoolbus		7.6
Other		6.3

III. TRAVEL CHARACTERISTICS

	August 19, 1976	November 17, 1976
Use of RTS Before Change		(n-84)
4-7 days/week		46.4
1-3 days/week		17.9
Less than once/week		23.8
Did not use RTS		11.9
Route Used Before Change		(n=74)
Route 5		60.8
Route 7		35.1
Route 9		2.7
Route 11		1.4
Use of Summerville Shuttle	(n=79)	(n=78)
4-7 days/week	37.2	41.0
1-3 days/week	27.9	35.9
Less than once/week	34.9	23.1
Use of Dial-A-Bus		(n=81)
4-7 days/week		2.5
1-3 days/week		7.4
Less than once/week		9.9
Never		80.2
Use of Loop Bus		(n=81)
4-7 days/week		3.7
1-3 days/week		1.2
Less than once/week		7.4
Never		87.7
Use of RTS Bus		(n=81)
4-7 days/week		46.9
1-3 days/week		24.7
Less than once/week		18.5
Never		9.9

III. TRAVEL CHARACTERISTICS (CONTINUED)

Use of Urban PERT	Adjusted Percent August 19, 1976	Adjusted Percent November 17, 1976
		(n=80)
4-7 days/week		8.7
1-3 days/week		8.7
Less than once/week		3.7
Never		78.7

IV. ATTITUDES (November Survey Only)

Perceived Problems

(Percent of respondents checking each problem; n = 77)

Getting to/from bus stop	16.9%
Waiting for bus	33.8
Getting on/off bus	10.4
Lack of privacy	9.1
Courtesy/helpfulness of drivers	10.4
Speed	13.0
Comfort	9.1
Cost	14.3
Number of transfers	22.1
Bus scheduling	32.5
All satisfactory	40.3

Attitudes Toward Bus Travel

(n=25-31)

(1)	(5)	Mean	Standard Deviation
Simple	Complicated	2.57	1.35
Safe	Dangerous	1.71	1.01
Convenient	Inconvenient	2.60	1.25
Inexpensive	Expensive	2.81	1.33
Modern	Old-Fashioned	2.40	1.08
Enjoyable	Unenjoyable	2.70	1.20
Quiet	Noisy	2.68	1.16
On-Time	Late	2.78	1.37
Fast	Slow	3.00	1.19
Comfortable	Uncomfortable	2.39	1.32
High Status	Low Status	3.58	1.27

Importance of Travel Characteristics

(3) Very Important; (2) Moderately Important; (1) Unimportant

(n=21-24)

	Mean	Standard Deviation
Safety	2.63	0.58
Convenience	2.75	0.44
Punctuality	2.75	0.53
Cost	2.42	0.72
Speed	2.25	0.53
Comfort	1.88	0.54
Simplicity	2.25	0.79
Enjoyment	1.57	0.51
Modernity	1.52	0.59
Status	1.08	0.28
Noise	1.63	0.58

APPENDIX A.16

DECEMBER 1976 URBAN PERT ON-BOARD SURVEY (IRONDEQUOIT)

ROUTE ________

TIME ________

PT ________

URBAN PERT SURVEY

PERT is continually trying to improve the bus service offerred to you. You could help by taking 5 minutes to answer the following questions.

1. At what stop did you get on the bus? ________________________
(nearest intersection)

2. Where are you coming from? ________________________
(street address)

3. How did you get to the bus stop?
    1. ________ walked, how long ____________ minutes
    2. ________ bus picked me up
    3. ________ someone drove me
    4. ________ drove myself
    5. ________ other (please specify) ________________

4. At what stop will you get off the bus? ________________________
(nearest intersection)

5. Where are you going? ________________________
(street address)

6. How will you get there from the bus stop?
    1. ________ bus will drop me off at the door
    2. ________ someone will pick me up
    3. ________ drive myself
    4. ________ walk
    5. ________ other (please specify) ________________

7. How often do you use Urban PERT's doorstep pick-up and drop-off service?
    1. ________ never, why not? ________________________
    2. ________ less than once a month, why not more often?

       ____

    3. ________ 1-3 times per month, why not more often?

       ____

    4. ________ Once or more a week.

8. Do you have any suggestions on how we could improve the doorstep service?

____

____

9. Are you making a round trip by transit?
1. _______ yes
2. _______ no

10. What is the purpose of your trip?
1. _______ work
2. _______ shopping
3. _______ school
4. _______ doctor or dentist visit
5. _______ visit friend
6. _______ other (please specify) _______________________

11. Sex:
1. _______ female
2. _______ male

12. Age Group:
1. _______ Under 20
2. _______ 20-44
3. _______ 45-64
4. _______ 65 or over

13. Do you have a valid driver's license?
1. _______ yes
2. _______ no

14. Occupations:
1. _______ student
2. _______ home maker
3. _______ retired
4. _______ employed
5. _______ self-employed
6. _______ other, what? _______________________

Thank you for completing this questionnaire. It will help us to improve the service to better meet your transportation needs. If you wish to have further input into the improvement process, please take one of our mail-in surveys. Thank you.

YOUR NAME _______________________________________

ADDRESS _______________________________________

COMMENTS:

YOUR OPINIONS OF BUS TRAVEL

On the scales below, please indicate your general opinion of bus travel in Rochester. Base your opinion on what you have experienced or heard about local but travel from the user's viewpoint.

To indicate your opinion, look at the descritive scales below, each of which allows for a range of opinions on a particular characteristic, such as COMFORT. Then, mark what you consider to be the single most appropriate description on each scale by circling the relevant number. For instance, on the COMFORT scale, if you thought buses were a very comforatable form of travel for journeys in Rochester, you would circle "1" on the scale; however, if you thought that were a slightly uncomfortable form of travel, you would circle "4", and so forth.

TRAVEL CHARACTERISTICS	(Buses are:)	Very (1)	Slightly (2)	Neither or Both Equally (3)	Slightly (4)	Very (5)	(Buses are)
COST OF TRAVEL	Inexpensive	1	2	3	4	5	Expensive
ENJOYMENT	Enjoyable Form of Travel	1	2	3	4	5	Unenjoyable
SPEED	Fast	1	2	3	4	5	Slow
CONVENIENCE	Convenient Form of Travel	1	2	3	4	5	Inconvenience
STATUS	High Status Form of Travel	1	2	3	4	5	Low Status
COMFORT (Seats, Ride, etc.)	Comfortable	1	2	3	4	5	Uncomfortable
MODERNITY	Modern Form of Travel	1	2	3	4	5	Old-fashioned
SAFETY	Safe Form of Travel	1	2	3	4	5	Dangerous Form
SIMPLICITY	Simple to Use	1	2	3	4	5	Complicated
PUNCTUALITY	Provide On-Time Arrivals	1	2	3	4	5	Provide La Arrivals
NOISE	Quiet	1	2	3	4	5	Noisy

YOUR RANKING OF THE RELATIVE IMPORTANCE OF THE DIFFERENT TRAVEL CHARACTERISTICS

Listed below are the set of travel characteristics which appeared in the previous question. As on the previous question, please circle the answer that describes how important that characteristic is in your decision to use a car or bus for local travel.

	Unimportant or Don't Consider It	Moderately Important	Very Important
Cost of Travel	1	2	3
Enjoyment	1	2	3
Convenience	1	2	3
Status	1	2	3
Speed	1	2	3
Comfort (seats, noise, ride, etc.)	1	2	3
Modernity	1	2	3
Safety	1	2	3
Simplicity	1	2	3
Punctuality	1	2	3
Noise	1	2	3

Thank you for your cooperation and time.

Results of Urban PERT Survey of December 1976

Route	(n=112)
5 (St. Paul)	35.7
7 (Clinton)	22.3
9 (Hudson)	42.0

I. USER CHARACTERISTICS

Sex	(n=91)
Male	52.7
Female	47.3

Age	(n=90)
Less than 20	25.6
20-44	51.1
45-64	20.0
65 and over	3.3

Occupation	(n=87)
Student	18.4
Employed	73.6
Self-employed	3.4
Homemaker	3.4
Retired	1.1

Licensed Drivers	(n=87)
Licensed	41.4
Not Licensed	58.6

II. TRIP CHARACTERISTICS

Time Boarded Bus	(n=68)
9-10 PM	33.8
10-11 PM	33.8
11-12 PM	30.9
12-1 AM	1.5

Direction of Travel	(n=111)
Inbound (to CBD)	22.5
Outbound (from CBD)	77.5

II. TRIP CHARACTERISTICS (CONTINUED)

Access Mode	(n=109)
Walk	68.8
Bus pick-up	0.9
Driven	2.8
RTS	27.5

Egress Mode	(n=104)
Walk	78.8
Bus drop-off	1.9
Driven	1.0
RTS	16.3
Other	1.9

Round Trip by Transit	(n=86)
Yes	75.6
No	24.4

Use of Route Deviation Option	(n=99)
Once/week or more	30.3
1-3 times/month	2.0
Less than once/month	8.1
Never	58.6
First time	1.0

Trip Purpose	(n=112)
Work	62.9
Shopping	3.4
School	10.1
Personal visit	13.5
Other	10.1

Attitudes Toward Bus Travel (n=56-67)

(1)	→ (5)	Mean	Standard Deviation
Simple	Complicated	2.03	1.19
Safe	Dangerous	1.90	1.23
Convenient	Inconvenient	2.37	1.25
Inexpensive	Expensive	2.93	1.39
Modern	Old-Fashioned	2.21	1.21
Enjoyable	Unenjoyable	2.81	1.23
Quiet	Noisy	2.77	1.45
On-time	Late	2.51	1.32
Fast	Slow	2.87	1.26
Comfortable	Uncomfortable	2.40	1.35
High Status	Low Status	3.04	1.14

II. TRIP CHARACTERISTICS (CONTINUED)

Importance of Travel Characteristics

(3) Very Important; (2) Moderately Important; (1) Unimportant)

	(n=21-24)	
	Mean	Standard Deviation
Safety	2.60	0.60
Convenience	2.62	0.59
Punctuality	2.64	0.62
Cost	2.56	0.59
Speed	2.27	0.68
Comfort	2.16	0.78
Simplicity	2.18	0.70
Enjoyment	1.95	0.82
Modernity	2.02	0.68
Status	1.65	0.76
Noise	1.91	0.72

APPENDIX A.17

APRIL 22, 1977 RTS ROUTES 9 AND 10 ON-BOARD SURVEYS (IRONDEQUOIT)

RTS BUS

Please take the time to fill out this survey. This information is strictly confidential, and will be used to help RTS better understand its patrons.

Thank you for your time.

☐ I have already filled out this form today.

---

1. Are you:

_____ Male

_____ Female

2. In what age group do you belong?

_____ Under 20

_____ 20 - 44

_____ 45 - 65

_____ 65 and over

3. Do you have a valid drivers' license?

_____ Yes

_____ No

4. Are you:

_____ Employed

_____ Self-employed

_____ A Student

_____ A Homemaker

_____ Retired

_____ Other

5. What is the highest level of schooling that you have completed?

_____ Grade School

_____ Some High School

_____ High School Graduate

_____ Some College

_____ College Bachelor's Degree

_____ Some Graduate School

6. Where did your trip begin? (Please enter street address and city)

____

7. What is the final destination of your trip? (Pls.enter street address and city)

____

8. What is the reason for your trip?

_____ Work
_____ School
_____ Shopping
_____ Medical,Dental
_____ Personal Visit
_____ Recreation
_____ Personal Business
_____ Other (Specify) __________

9. How would you make this trip if this bus was not operating?

_____ I would not make this tip
_____ Drive a car myself
_____ Be driven by someone
_____ Use another bus· Route __________
_____ Walk or bicycle
_____ Taxi
_____ Other (specify) __________

10. Is this trip part of a round trip by transit today?

_____ Yes
_____ No

11. How many cars are in your household?

_____ None
_____ One
_____ Two
_____ Three or more

12. Check any of the following features of using this bus that you are not satisfied with. If you feel that all are satisfactory, check "All O.K." at the bottom.

_____ Getting to or from the bus stop
_____ Waiting for the bus (too long a wait)
_____ Getting on and off the bus
_____ Lack of privacy (like in a car)
_____ Courtesy and helpfulness of the drivers
_____ Speed of the ride
_____ Comfort of the ride
_____ Cost of the bus ride
_____ Number of transfers to get where you're going
_____ Bus schedule (buses run when you need them)

_____ All O.K.

13. Was there a car available for this trip?
______ Yes, with no inconvenience to others
______ Yes, with inconvenience to others
______ No

14. How often do you ride this bus?
______ days a week

YOUR OPINIONS OF BUS TRAVEL

On the scales below, please indicate your general opinion of bus travel for journeys about Rochester. Base your opinion on what you have experienced or heard about local travel by each mode from the user's viewpoint.

To indicate your opinion, look at the descriptive scales below, each of which allows for a range of opinions on a particular characteristic, such as COMFORT. Then, mark what you consider to be the single most appropriate description on each scale by circling the relevant number. For instance, on the COMFORT scale, if you thought buses were a very comfortable for of travel for journeys in Rochester, you would circle "1" on the scale; however, if you thought they were a slightly uncomfortable form of travel, you would circle "4," and so forth.

TRAVEL CHARACTERISTICS	(Buses are:)	Very (1)	Slightly (2)	Neither or Both Equally (3)	Slightly (4)	Very (5)	(Buses are:)
COST OF TRAVEL	Inexpensive	1	2	3	4	5	Expensive
ENJOYABLENESS	Enjoyable Form of Travel	1	2	3	4	5	Unenjoyable
SPEED	Fast	1	2	3	4	5	Slow
CONVENIENCE	Convenient Form of Travel	1	2	3	4	5	Inconvenient
STATUS	High Status Form of Travel	1	2	3	4	5	Low Status
COMFORT (Seats, Ride, etc.)	Comfortable	1	2	3	4	5	Uncomfortable
MODERNITY	Modern Form of Travel	1	2	3	4	5	Old-fashioned
SAFETY	Safe Form of Travel	1	2	3	4	5	Dangerous Form
SIMPLICITY	Simple to Use	1	2	3	4	5	Complicated
PUNCTUALITY	Provide On-Time Arrivals	1	2	3	4	5	Provide Late Arrivals
NOISE	Quiet	1	2	3	4	5	Noisy

YOUR RANKING OF THE RELATIVE IMPORTANCE OF THE DIFFERENT TRAVEL CHARACTERISTICS

Listed below are the set of travel characteristics which appeared in the previous question. As on the previous question, please circle the answer that describes how important that characteristic is in your decision to use a car or bus for local travel.

	Unimportant or Don't Consider It	Moderately Important	Very Important
Cost of Travel	1	2	3
Enjoyment	1	2	3
Convenience	1	2	3
Status	1	2	3
Speed	1	2	3
Comfort (seats, noise, ride, etc.)	1	2	3
Modernity	1	2	3
Safety	1	2	3
Simplicity	1	2	3
Punctuality	1	2	3
Noise	1	2	3

Thank you for your cooperation and time.

Results of RTS Routes 9 and 10 Survey of April 22, 1977

	Adjusted Percent
Route	(n=129)
9 - Hudson	32.6
10 - Portland	67.4
I. User Characteristics	
Sex	(n=129)
Male	27.9
Female	72.1
Age	(n=128)
Under 20	27.3
20-44	27.3
45-64	32.0
65 and over	13.3
Occupation	(n=129)
Student	23.3
Employed	39.5
Self-employed	0.8
Retired	15.5
Homemaker	14.7
Other	6.2
Education	(n=125)
Grade school	7.2
Some high school	30.4
High school graduate	36.8
Some college	17.6
College graduate	4.0
Some graduate school	4.0
Licensed Drivers	(n=129)
Licensed	48.8
Not licensed	51.2
Autos In Household	(n=114)
0	17.5
1	50.0
2	26.3
3 or more	6.1
Mean (assuming 3.2 for 3 or more):	1.22

II. Trip Characteristics

Adjusted Percent

Trip Purpose	(n=116)
Work	37.9
School	15.5
Shopping	9.5
Medical	4.3
Personal visit	7.8
Recreation	4.3
Personal business	12.1
Other	8.6

Round Trip by Transit	(n=112)
Yes	69.6
No	30.4

Auto Available for Trip	(n=107)
Not available	65.4
Available, but inconvenient for others	15.0
Available and convenient	19.6

Alternative Mode	(n=115)
No trip	27.8
Drive	26.1
Driven	27.0
Other RTS route	7.8
Walk	9.6
Other	1.7

Frequency of Use (Same Route)	(n=103)
1 day a week	9.7
2 days a week	7.8
3 days a week	14.6
4 days a week	12.6
5 days a week	44.7
6 days a week	6.8
7 days a week	3.9

III. Attitudes

Perceived Problem (Percent of Respondents Checking Each Problem; n=111)

Getting to/from bus stop	15.3
Waiting for bus	27.0
Getting on/off bus	5.4
Lack of privacy	6.3
Courtesy/helpfulness of drivers	5.4
Speed	11.7
Comfort	11.7
Cost	20.7
Number of transfers	6.3
Bus scheduling	16.2
All satisfactory	48.7

III. Attitudes (Continued)

Attitudes Toward Bus Travel

(1) →	(5)	Adjusted Percent (n=86-91) Mean	 Standard Deviation
Simple	Complicated	1.65	0.91
Safe	Dangerous	1.73	0.92
Convenient	Inconvenient	2.16	1.23
Inexpensive	Expensive	2.67	1.29
Modern	Old-fashion	2.37	1.02
Enjoyable	Unenjoyable	2.74	1.15
Quiet	Noisy	3.17	1.27
On-time	Late	2.37	1.31
Fast	Slow	2.84	1.08
Comfortable	Uncomfortable	2.71	1.23
High Status	Low Status	2.79	1.17

Importance of Travel Characteristics

(3) Very Important; (2) Moderately Important; (1) Unimportant

	(n=88-103) Mean	 Standard Deviation
Safety	2.57	0.68
Convenience	2.64	0.64
Punctuality	2.63	0.66
Cost	2.28	0.78
Speed	2.26	0.68
Comfort	2.27	0.68
Simplicity	2.03	0.77
Enjoyment	1.97	0.79
Modernity	1.84	0.76
Status	1.66	0.77
Noise	1.98	0.74

APPENDIX A.18

DOCUMENTATION OF THE SMART FIXED-ROUTE FEEDER AND DIAL-A-BUS MODEL

(Excerpted from Lucas, Gerald R. and Jones, Paul S.,
SYSTAN'S MACROANALYTIC REGIONWIDE TRANSPORTATION
MODEL (REVISED) -- USER'S MODEL, SYSTAN, INC.,
Los Altos, California, August 1978)

GENERAL DESCRIPTION

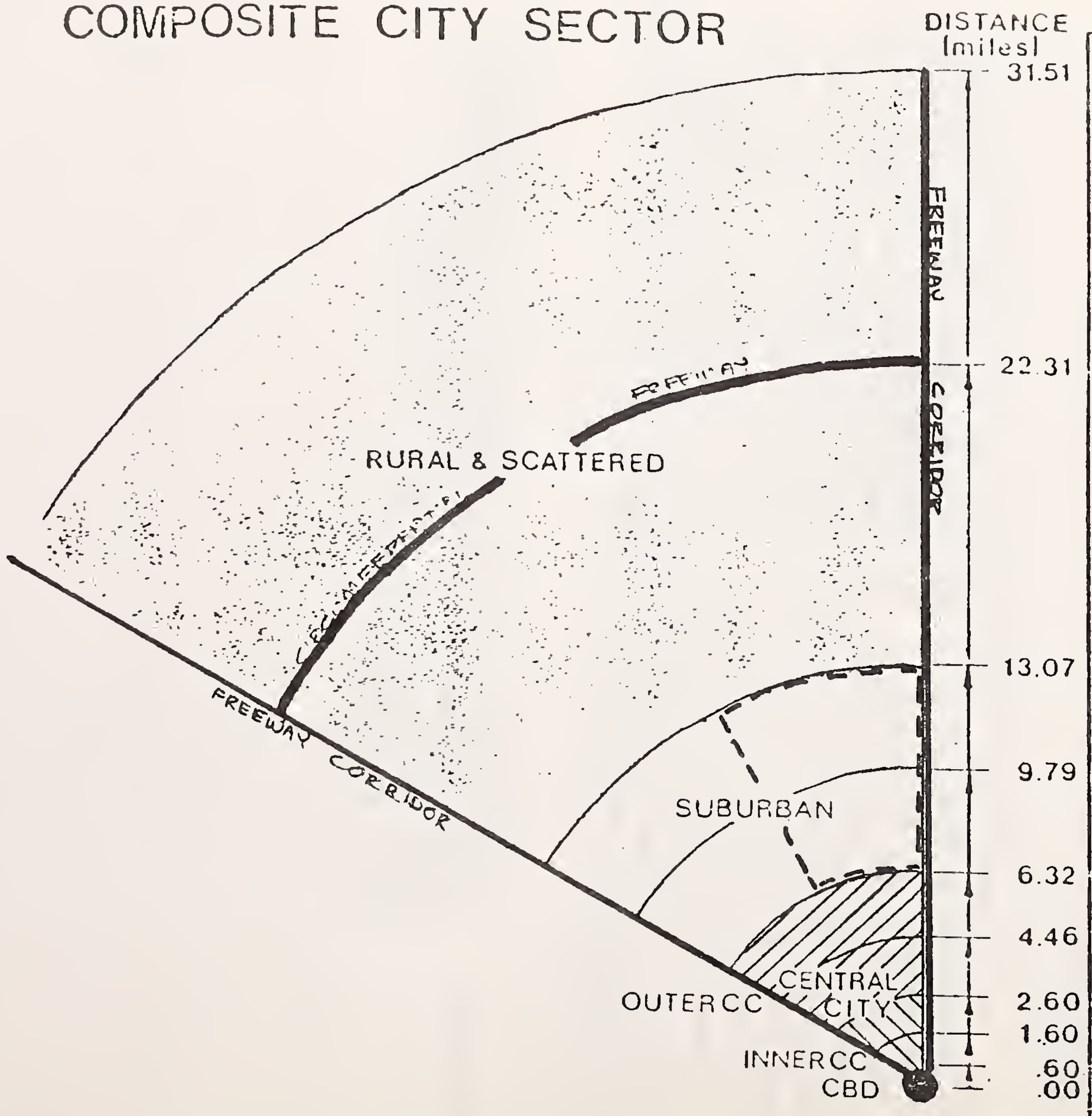
The SMART model was designed to analyze hypothetical cities which are assigned composite or notional characteristics and real cities with structural approximations of their actual characteristics. The SMART model represents transportation at three different levels: (1) local; (2) door-to-door; and (3) regionwide. The relationships among the different levels are illustrated in Exhibit 1 for a 60° sector of a hypothetical urban area. The sector is bounded by two radial corridors which, in this case, are made up of controlled access freeways. The urban area is divided up into a round central business district (CBD) and four concentric rings. The innermost ring, the inner central city, extends outward from the CBD a distance of two miles. Within this ring, the 60° sector has an area of 3.35 square miles and a population of 28,284 persons. Each ring is served by one or more circumferential arteries that are modeled as a single route around the center of the ring. The fourth ring (rural and scattered) contains a circumferential freeway. The other circumferential routes are arterial streets.

Transportation analysis at the local level is concerned with trips that take place wholly within a local module and with those portions of longer trips that occur within the local module. Local transportation is studied for three types of modules: (1) residential; (2) major activity center; and (3) line-haul corridor. Residential modules are zones that in the aggregate comprise most of the area of the urban region under study. The dashed line in Exhibit 1 identifies a typical residential zone in Ring 3, suburban, which is bounded by the radial freeway corridor and a radius through the center of the sector. This zone has an area of 34.26 square miles, a population of 74,183 persons, and provides employment for 32,143 persons, Residential areas can vary widely in size and shape. They need to relate to the regionwide geometry only when regionwide analysis is performed.

Author's Note: The SMART model analysis conducted for the Rochester Evaluation was done for a residential module of 15.2 square miles, which represented the Greece service area. No regionwide analysis was performed.

EXHIBIT 1

COMPOSITE CITY SECTOR



LAND AREA sq. mi.	POP.	POP. DENSITY pop./sq.mi.	DEN emp./sq.
430.43	38667	89.8	27.9
68.53	148367	2165.0	938
17.37	82784	4766.0	2584
3.35	28284	8442.6	7205
.19	649	3416.1	75529
519.87	298751		

TECHNICAL FEATURES

The SMART model calculates service and performance measures for a large number of transportation alternatives. The measures are expressed as expected or mean values. Mean values suffice for most measures; e.g., cost, number of vehicles, vehicle productivity, energy requirements, and air pollution. However, mean travel time is not a sufficient measure of service to passengers. All travelers are concerned with the dependability of expected travel time. Therefore, a treatment of travel time variability is included in the SMART model. Travel time variability is estimated for each of the different activities that make up a trip - walk time, wait time, vehicle travel time, and transfer time. Variability is expressed as a statistical variance.

The SMART model investigates relationships between public transit and automobile travel for a variety of different traffic divisions between the modes. However, the model does not estimate changes in total travel that might follow the introduction of new and useful public transportation services. These changes can be introduced by the user who wishes to study the impact of increased travel on all travel modes and at different modal splits among competing services.

The technical features of the SMART model can be described in terms of five different categories: (1) operating policy; (2) system alternatives; (3) urban structure; (4) regionwide analysis; and, (5) system ridership.

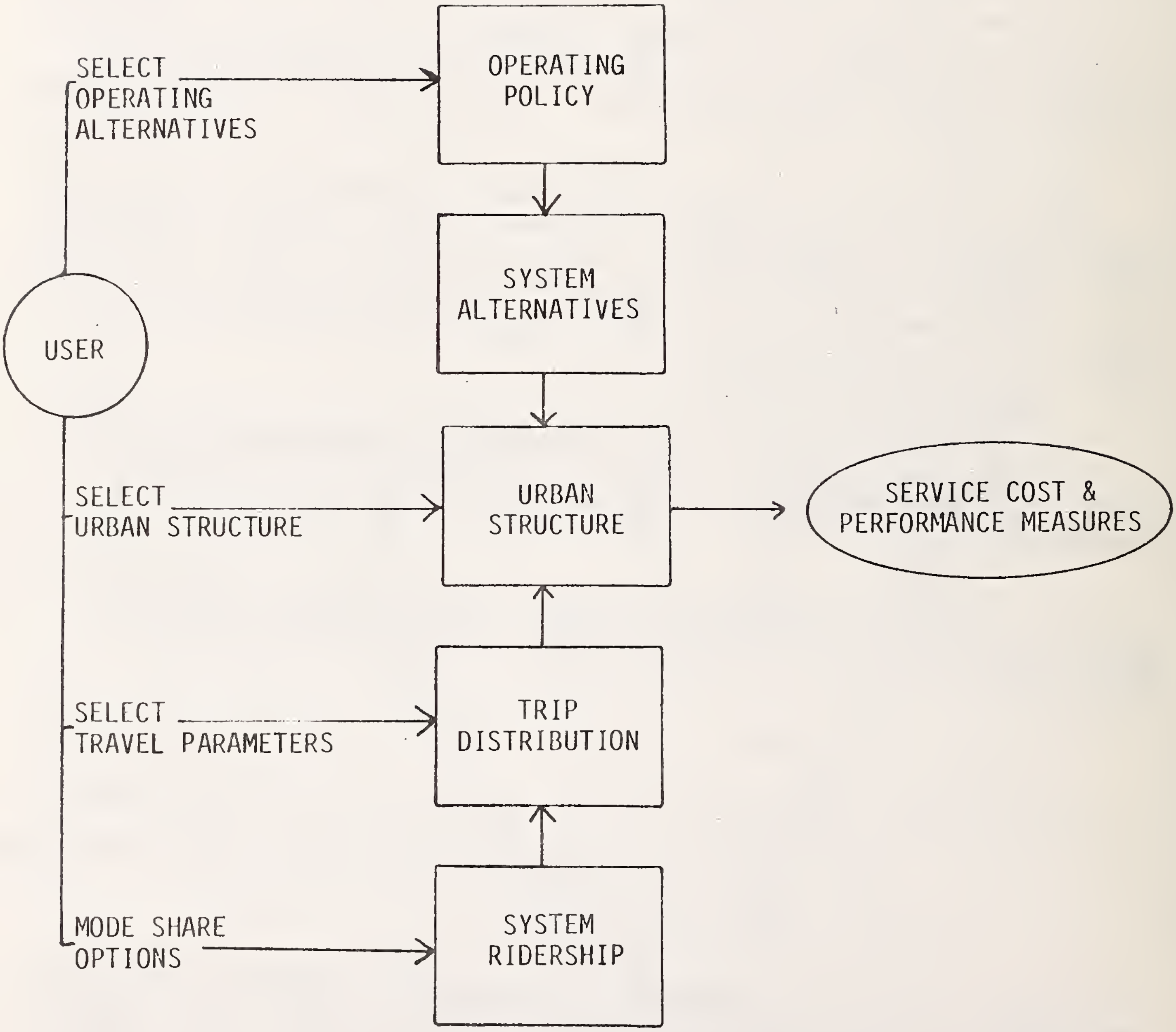
The relationships among the different categories are illustrated in Exhibit 6. The user provides operational, urban structure, travel and model share inputs. The level and amount of input that he provides depends on:

* How well the problem is defined,
* The nature and amount of demographic and travel data available,
* The investment that the user wishes to make in data preparation, and
* The desired accuracy of the result.

For example, the user may want only a very general indication of cost and performance for one or several residential sites. In this case, input can be restricted to the areas and population densities of the sites and the minimum service parameter. Default values can be used for all other parameters. In this case, data preparation will require just a few minutes. At the other extreme, the user who wants to apply the full power of the SMART model to an urban region may find it worthwhile to summarize a complete travel table so as to get the best possible representation of areawide travel.

EXHIBIT 6

FUNCTIONAL RELATIONSHIPS



The SMART model applies the different mode share to the trip distribution data to generate travel volumes. The user's operating policy is applied to the transportation system alternatives, that are a part of the model, and set in the urban structure to determine the service and cost associated with each alternative. The final measures of service, cost and performance are summarized by the model in its output.

Each of the model categories is developed below to acquaint the user with its scope and limitations.

OPERATING POLICY

Operating policy concerns: (1) the minimum level of service to be provided by transportation systems filling feeder (residential), line-haul, and distribution (major activity center) functions; (2) the level of integration desired among complementary transportation services; and, (3) labor assignment constraints.

Level of Service

The SMART model determines the frequency of service needed to meet passenger demand. Thus, if there are D passengers per hour seeking service from vehicles that hold C passengers each, then the number of buses per hour is D/C. Exhibit 7 illustrates the relationship between passenger demand and the interval between successive vehicles, or headway. At a demand level D_1, vehicles operate at mean headway of h_1 minutes so that on the average each vehicle carries C passengers*. If the demand were lower, the headway would be longer so as to use the vehicles effectively. Eventually, as demand drops, a point is reached where a further increase in headway would greatly inconvenience present passengers and it would turn large numbers of them away. The user designates this point as h_{max} - the maximum acceptable headway - and declares that all services shall provide vehicles at headways not to exceed h_{max}. Thus, as demand falls below D_2, the headway is held constant so that vehicles carry less than full loads.

Exhibit 8 illustrates the impact of changing demand on travel time and cost. As demand declines, headway increases. As a result, waiting time increases and overall travel time increases. When demand declines below D_2, the demand corresponding to h_{max} headway is held constant with the result that travel time is also constant. The impact on cost per passenger is the opposite. As long as vehicles are filled (between D_2 and D_1), the cost per passenger remains constant. However, as demand declines below D_2, vehicles are only partly filled and costs increase sharply. By specifying a minimum headway, the user guarantees a minimum level of service to all passengers; however, higher costs are risked if the demand does not materialize as expected.

The minimum level of service is not always best expressed in terms of

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*Passenger capacity is typically equal to the number of seats per vehicle. Thus, short demand peaks can be accommodated by accepting standing passengers.

EXHIBIT 7

DEMAND-HEADWAY RELATIONSHIP

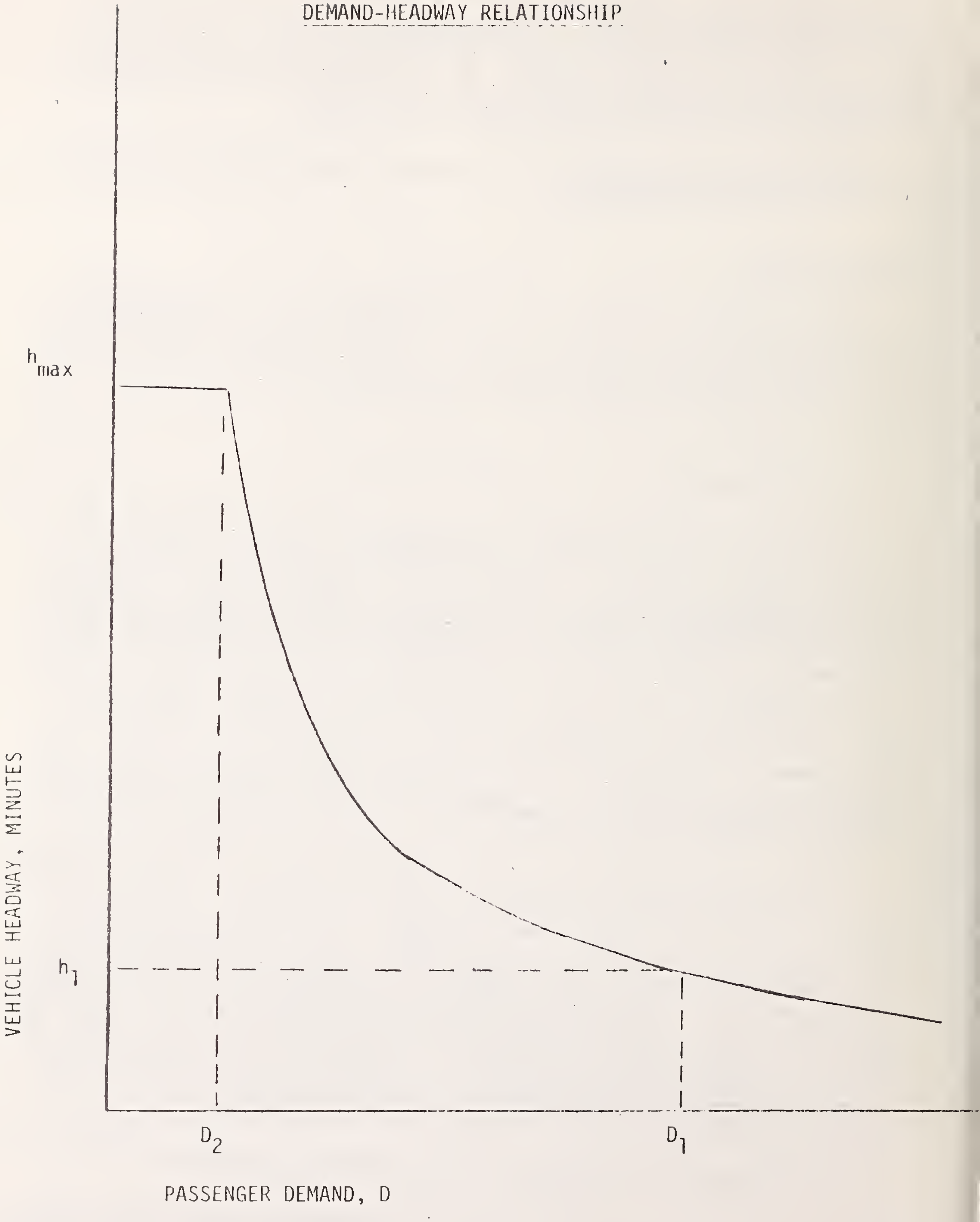
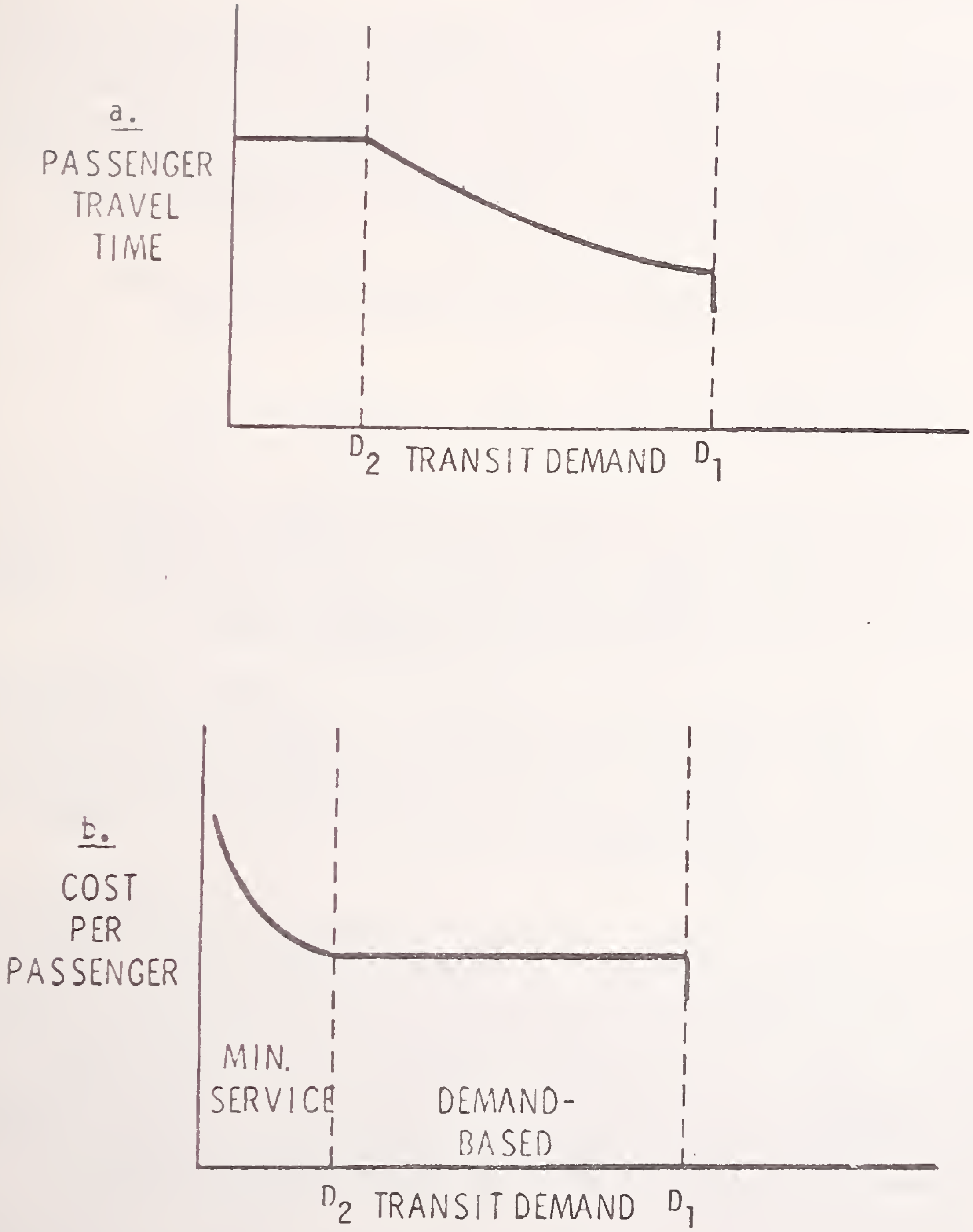


EXHIBIT 8

TYPICAL SERVICE RANGES



vehicle headway. For example, the person who designs fixed bus routes to serve a residential module can vary both route spacing and vehicle headway to achieve the desired level of service (Exhibit 9). Exhibit 9a illustrates a residential area with six bus routes that extend from the minor activity center to different corridors in the residential area. For a fixed number of buses, N, each route would have N/6 buses assigned to it. If the average round trip time per route is T, then the mean headway is 6T/N, and the mean waiting time is 3T/N, assuming random passenger arrival at bus stops and vehicle schedule adherence.

Exhibit 9b illustrates the same residential area with only three bus routes. In this case, the average passenger has to walk twice as far to catch a bus, but with N buses available, the headway and the expected wait would only be half as long. Ward (Reference 6) proposed a measure of service equal to the product of walk time and wait time. This effectively equates the two route configurations of Exhibit 9, provided the same number of buses are used for both. If KW is the walk-wait product, then

$KW_a = W \times \frac{3T}{N}$, where W = mean walking time for configuration a. Similarly,

$$KW_b = (2W)\left(\frac{3T}{2N}\right) = \frac{3WT}{N} .$$

Thus, by using the product of walk time and wait time as a measure of level of service, one need only be concerned with the number of vehicles and the travel time; the specific route structure need not be specified. The walk-wait criterion is effective for other residential area services, including flexible-route bus, check-point bus, and check-point dial-a-ride.

Level of service criteria for other types of systems pose different problems. Subscription services are planned in advance and operate on a prescribed schedule. Therefore, the passenger need not wait very long unless an emergency of some sort occurs. An arbitrary wait time of five minutes is assigned to subscription services to account for traffice irregularities and minor delays.

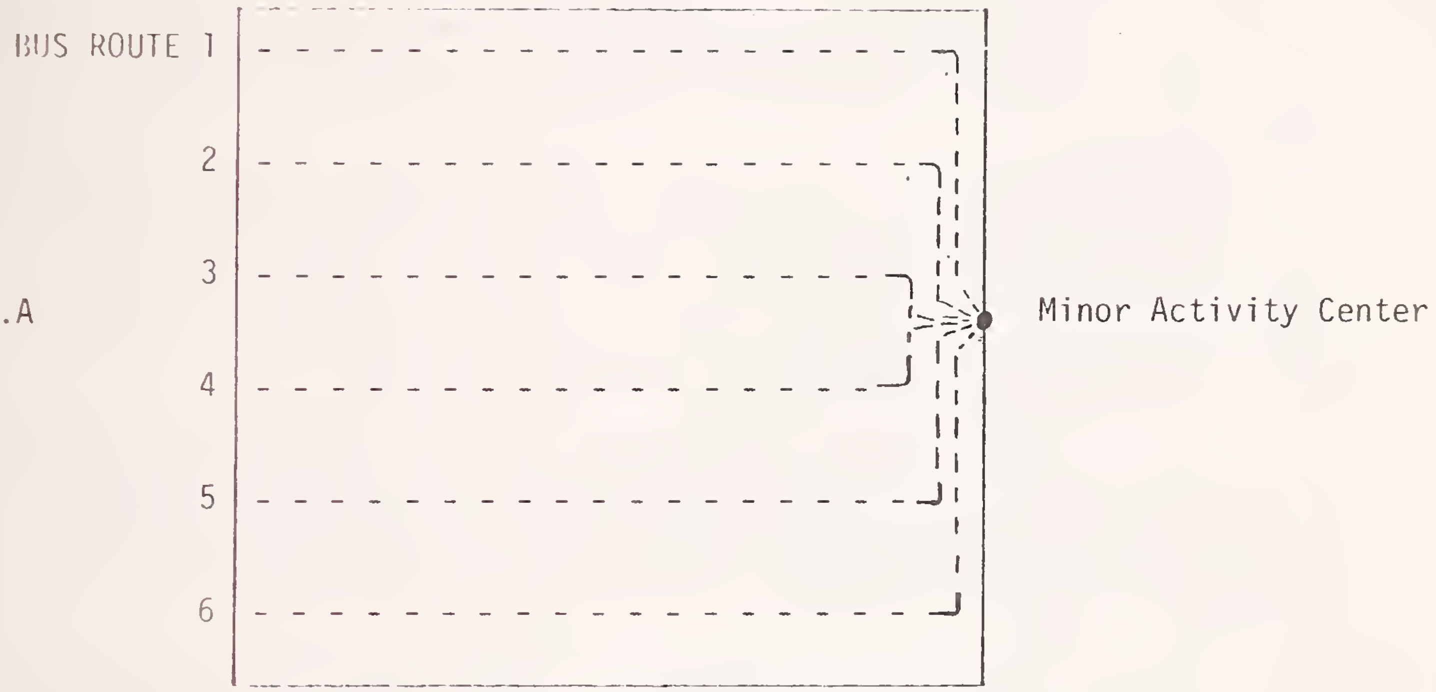
Demand-responsive systems, dial-a-ride, and shared-ride taxi operate on both an immediate response and an advance scheduled mode. Waiting time is a factor for the immediate response mode even though the traveler may wait at home, at work, or at another place where his time can be used to advantage. The fact that the traveler must wait for service after his call introduces inconvenience and some uncertainty. The waiting time for immediate response passengers is calculated as one-half of the time required for a demand-responsive vehicle to make a tour from the minor activity centers around its assigned area and back to the minor activity centers.

The wait time for line-haul and distribution (major activity center) vehicles is calculated as one-half the headway. This assumes random passenger arrival. This assumption is reasonable as long as service is frequent and fixed schedules are not widely disseminated. When passengers do understand system performance, they react to it in a variety of ways (see Reference 7).

EXHIBIT 9

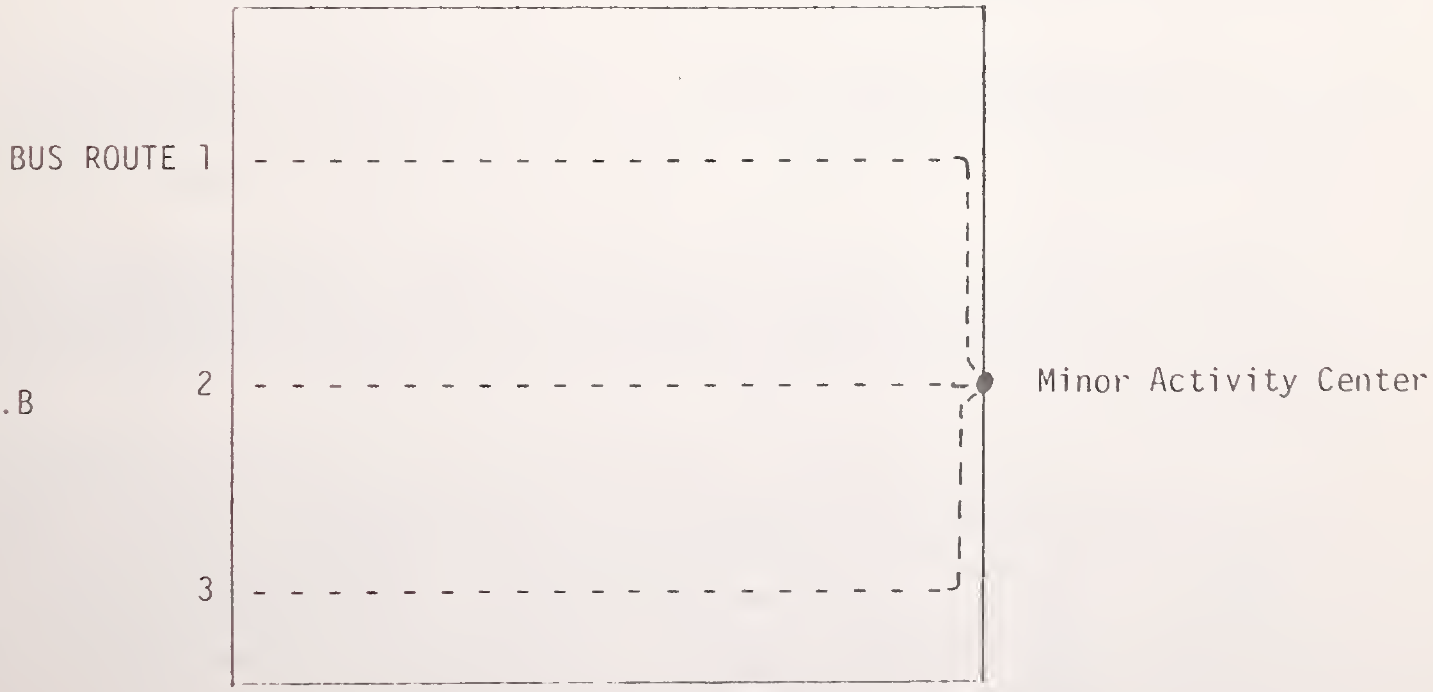
RELATIONSHIP BETWEEN ROUTE SPACING AND HEADWAY

9.A



Headway on each route = 2h

9.B



Headway on each route = h

As outlined above, the SMART model uses a straightforward approach to level of service. This approach maintains the analytical simplicity of the model. For the user who wishes to study the effects of variable values for different categories of travel time (waiting, walking, riding), and the impacts of schedule performance, much can be done outside the SMART model.

Residential Area Services

The residential area services have been developed for square residential areas with uniform population densities. Deviations from this uniform density are possible. These deviations are discussed in the urban structure section.

Residential area trips include: (1) trips that take place entirely within the residential area;* (2) trips that originate in the residential area but have destinations outside the residential area; and, (3) trips with destinations in the residential area but origins outside of it. No trips that pass through the residential area are studied. Through trips are presumed to move along line-haul corridors.

The residential module only models those portions of trips that occur in the residential area. Trips that originate or terminate outside the residential area are presumed to originate or terminate at the minor activity that represents the residential area's interface with the adjacent line-haul corridor.

Mean trip length depends on trip purpose. The length of trips that take place entirely within the residential area and trips that originate within the residential area but terminate outside the area have a mean length equal to the mean distance from the residential area to the minor activity center (see Exhibit 11). This is equal in length to:

$$\frac{S}{4} + \frac{S}{R} = \frac{3S}{4} \quad \text{or} \quad \frac{3}{4}\sqrt{A}\ , \text{ where } S = \sqrt{A}$$ is the length of the side of the square residential area.

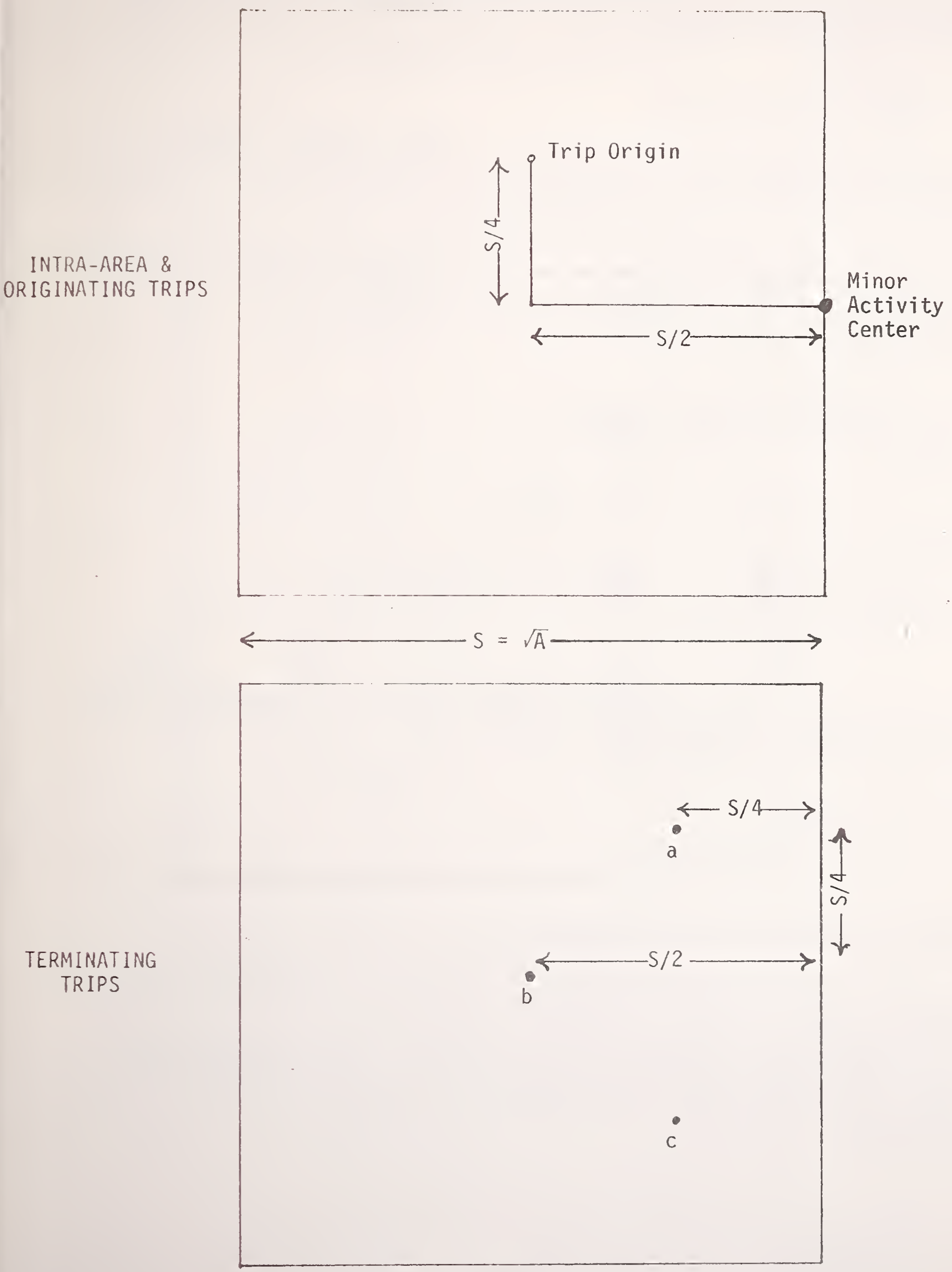
Trips that originate outside the residential area and terminate within it are divided into two classes: half of the trips terminate within walking distance of the minor activity center; the other half are distributed uniformly among three destinations illustrated in Exhibit 11 and labeled a, b and c.

Street patterns within a residential area are assumed to have a rectangular grid pattern characteristic of streets near the centers of most cities. The labyrinthine suburban development patterns restrict local movements, but they support movements between homes and minor activity centers that closely resemble movements through a grid street pattern. Inasmuch as this latter category of trip dominates residential area travel, the grid assumption is reasonably representative.

*Author's Note: The SMART analysis conducted for the Evaluation included the first class of trips only.

EXHIBIT 11

MEAN RESIDENTIAL AREA TRIPS



No traffic congestion is considered within residential areas. The streets are typically underused, even at peak periods, so that travelers are not delayed in traffic.

Many-to-Few Dial-A-Ride

Exhibit 14 illustrates the many-to-few demand responsive configurations in the SMART model. An individual service territory with an area $\frac{A}{N}$ is assigned to each vehicle. After each tour of its territory, a vehicle travels non-stop to the minor activity center area, which it circles, making six stops if necessary. The vehicle then returns to its service territory to deliver passengers picked up at the activity centers and to collect more passengers. With uniform demand over the residential area, the mean tour distance, D, is:

$$D = \sqrt{\frac{A}{N}} \{2.1 + n \left(0.16 + \frac{1}{n+1}\right)\} + 2 \sqrt{A} \left(1.25 - \frac{1}{\sqrt{N}}\right)$$

Mean tour time, T, is:

$$T = \frac{D}{v} + np + u$$

The number of vehicles needed to service a residential area depends on the demand density, d, and the tour characteristics:

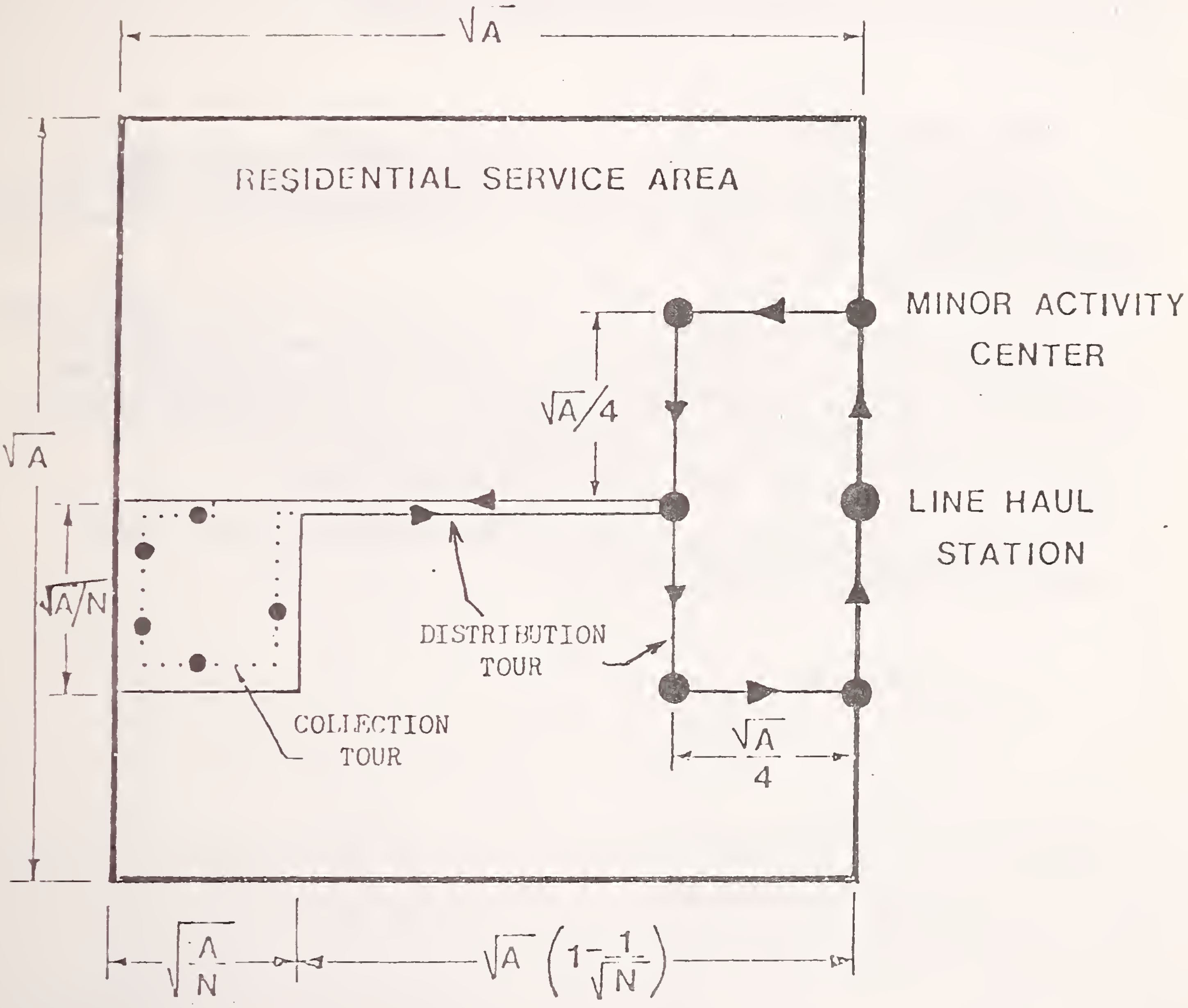
$$N = \frac{dT \sqrt{A}}{n}$$

The three equations are solved simultaneously for values of D, T and N.

Mean travel time is the sum of waiting time and in-vehicle time; no walking time is assigned for doorstop services. For immediate response service, waiting time is one-fourth of the vehicle tour time, T/4, reflecting random requests for service and routing flexibility in the service territory but not in the minor activity center. For scheduled service, mean waiting time is set at 10 minutes to reflect the variability of vehicle scheduling.

EXHIBIT 14

DIAL-A-RIDE CONFIGURATION



In-vehicle time, Tv, is:

$$Tv = \frac{1}{2v} \sqrt{\frac{A}{N}} \{2.1 + n (0.16 + \frac{1}{n+1})\} + \frac{\sqrt{A}}{v} (1.25 - \frac{1}{\sqrt{N}})$$

This assumes that most terminating passengers are dropped off in the service territory before originating passengers are picked up.

Route Based Services

Route based services are characterized by regular or semi-regular route patterns. Routes can be fixed or flexible with point or route deviation. The SMART model generalizes the route patterns by using the walk-wait service criterion.

The fixed-route structure extends from the minor activity center across the residential area (see Exhibit 15). One or more parallel routes are provided to satisfy the walk-wait criterion. Routes are located symmetrically so as to serve the entire residential area with the same maximum walk. For example, in the three route structures of Exhibit 15, all residents live within a two block walk of a fixed route.

With uniform demand over the residential area, the mean distance traveled per fixed-route tour, D, is:

$$D = \frac{5}{2} \sqrt{A}$$

The mean tour time, T, is:

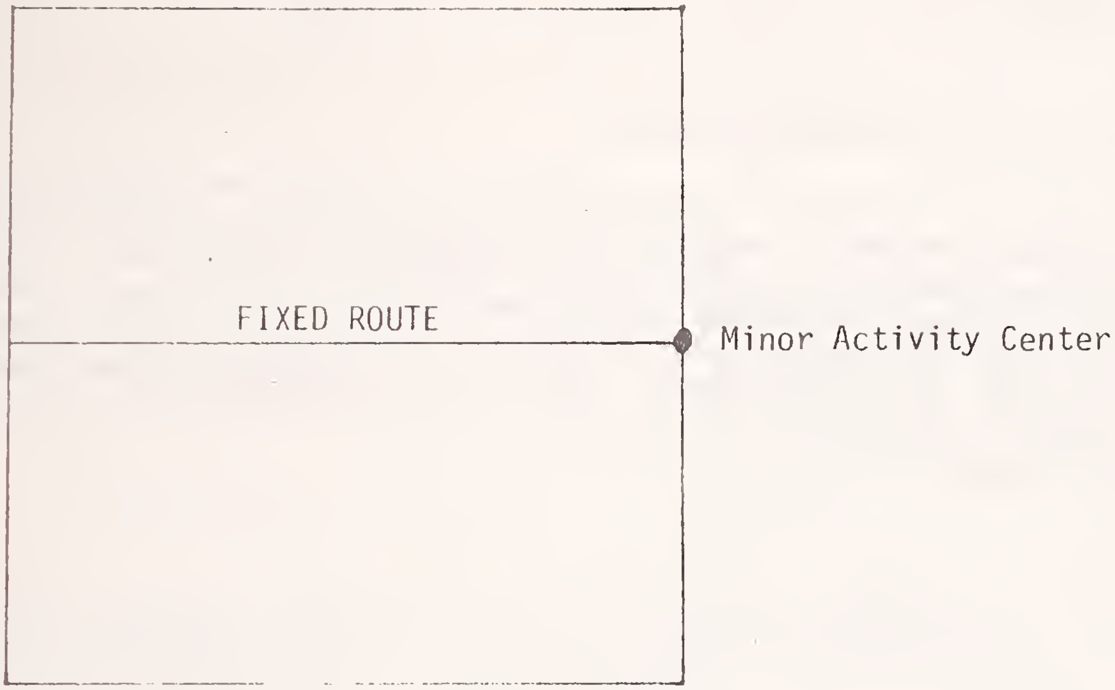
$$T = \frac{D}{v_e}$$

where: v_e is the effective vehicle speed.

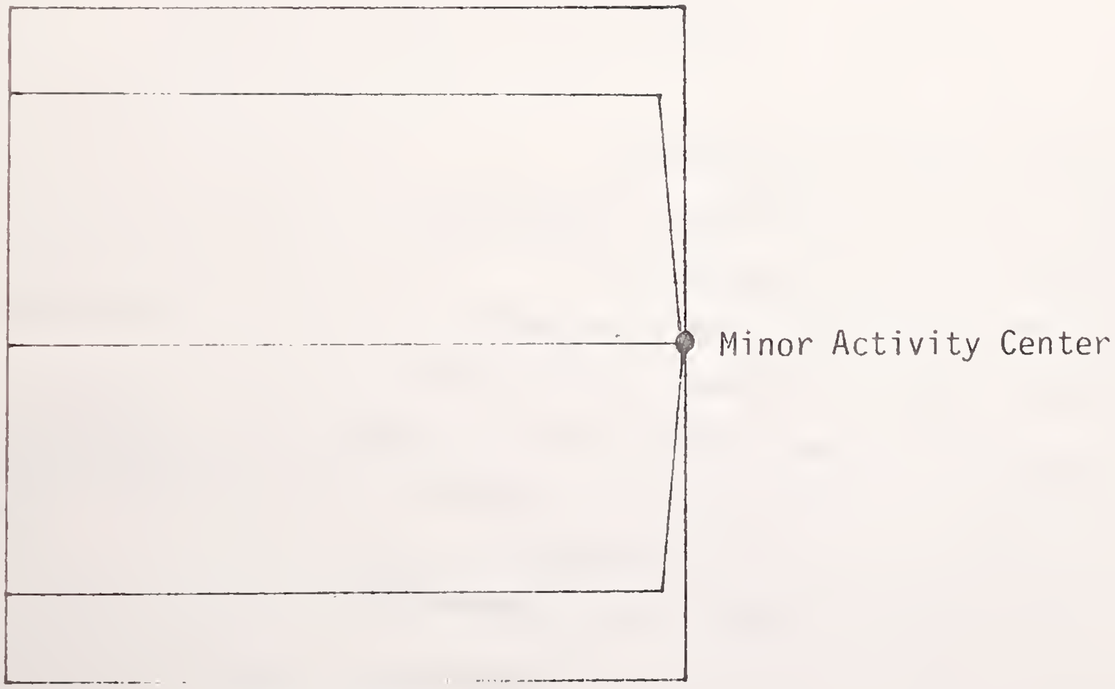
$$v_e = \frac{1}{\frac{1}{v} + np + u}$$

EXHIBIT 15

FIXED-ROUTE STRUCTURE IN RESIDENTIAL AREAS



ONE ROUTE



THREE ROUTES

The number of vehicles, N, needed to serve a residential area is:

$$N = \frac{5T \sqrt{A}}{2KW}$$

where: KW is the walk-wait product.

Passenger trip times, route spacing and service frequency are converted to average walk and wait times by assuming the average walking distance represents one-quarter the route spacing, and the average wait time represents half the vehicle headway (random arrival). The average in-vehicle time within the residential area is computed by dividing the average trip distance by the effective vehicle speed. Total passenger trip time, T_p, within the residential area is equated to the sum of the walk, wait and in-vehicle times:

$$T_p = W + K + \frac{5}{8} \frac{\sqrt{A}}{v_e}$$

where: W is walk time, and
K is wait time.

DEFINITION OF VARIABLES CITED

A = Service Area Size (Exogenous)
D = Mean Vehicle Tour Distance (Endogenous)
d = Demand Density (Exogenous)
K = Mean Passenger Wait Time (Endogenous)
N = Number of Vehicles Operated (Endogenous)
n = Number of Passenger Pickup Stops per Vehicle Tour (Endogenous)
p = Time Required per Pickup Stop (Exogenous for Dial-A-Ride; Endogenous for Fixed-Route)
T = Mean Vehicle Tour Time (Endogenous)
T_p = Total Passenger Travel Time (Endogenous)
T_v = Mean In-Vehicle Travel Time (Endogenous)
u = Activity Center Dropoff Time (Exogenous)
v = Non-Stop Vehicle Operating Speed (Exogenous)
v_e = Effective Vehicle Operating Speed (Endogenous)
W = Mean Passenger Walking Time (Endogenous)

APPENDIX A.19

PERT ACCOUNTING PROCEDURES AND SAMPLE ACCOUNTING RECORDS

PERT ACCOUNTING PROCEDURES AND SAMPLE ACCOUNTING RECORDS

PERT ACCOUNTING PROCEDURES

RTS has maintained continuous accounting records of PERT operations. However, when PERT became an UMTA demonstration project in April 1975, PERT management changed its accounting procedures in three significant ways, in accordance with UMTA's guidelines. (Samples of these records are shown in this Appendix.) All recorded costs during the pre-demonstration period are used in the following analysis, as are all costs other than the MIT contracts for the demonstration period. Therefore, in order to evaluate PERT's costs over both the pre-demonstration and demonstration period, a uniform definition of costs is necessary. This appendix describes the alterations to PERT's accounting required to achieve that objective.

Definition of a Uniform Accounting Period for Greece Cost Analyses

With the start of the UMTA demonstration period, PERT began issuing accounting reports every four weeks instead of every month as it had done during the pre-demonstration period. However, a uniform accounting period is required in order to evaluate changes in costs over time. Essentially, the choice was between converting all demonstration period records to a monthly basis, or converting all pre-demonstration period records to a four-week basis or, equivalently, to a weekly basis. The weekly basis was chosen because it would create accounting records compatible with those in effect until the demonstration concluded.

To transfer the pre-demonstration records from a monthly to a weekly period, costs were allocated from a specific month to one of its constituent weeks. Vehicle-hours was chosen as the assignment index, because it mirrored fairly accurately the actual assignment and expenses of the major cost inputs. The wages and benefits of drivers, for instance, accounted for about half of all PERT expenses and were directly tied to hours. Although the costs of maintenance, fuel and bus depreciation, which together constituted about one-quarter of PERT expenses, were more directly tied to vehicle-miles than vehicle-hours, miles and hours are closely related and, consequently, the allocation of these costs on a vehicle-hour basis should produce little, if any, distortion. With respect to the overhead costs of capital, administration, and rent, which accounted for the remaining costs, vehicle-hour allocation of costs may introduce a slight linear bias into the marginal cost estimations.*

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* If the additional (or marginal) passenger transported in the additional vehicle-hour did not require these expenses, then their inclusion in the accounting records will result in a bias toward linearity or constant returns to scale. However, this will recur only within, not among, months and it is among months that most of the vehicle-hour variation occurs.

To derive the costs for a given week, the appropriate month's costs were multiplied by the ratio of weekly to monthly vehicle-hours. In other words, each week received its vehicle-hour share of monthly costs. Where a week fell into two calendar months, the daily vehicle-hour records were used to assign to each week its vehicle-hour share of each month's costs.

The demonstration records were disaggregated from a four-week to a weekly basis, again using the vehicle-hour allocation. This disaggregation was straightforward and, except in cases of a PERT holiday, produced about a one-fourth allocation to each week. (The allocation ranged from .24 to .26.)

Thus, the uniform accounting period is the week. Analysis of the weekly total costs revealed a distinct and not surprising cycle peaking at eight weeks. The presence of the cycle implies that a portion of PERT payments (probably for overhead costs) did not enter the accounts on a systematic basis. Therefore, payment of that factor in one period (i.e., month), reduced its payment to the next, thus producing a cycle extending over two adjacent months.

Definition of Uniform Depreciation Guidelines

When the demonstration began, PERT accounting underwent a second major change. Depreciation charges were eliminated from four-week PERT records. Simultaneously, PERT stopped issuing its accompanying capital asset reports. This change occurred because of the separation of capital and operating budgets under the demonstration.

Until the demonstration, depreciation charges were included in the monthly records. To assess these charges, the straight-line depreciation method on original cost was used. In order to generate a uniform stream of depreciation charges, the capital expenditures made in the demonstration period were identified. The largest of these were the twelve GM buses, which cost $467,000, and the mobile vehicle CRT terminals costing $111,000. Altogether, the demonstration capital budget was $858,000.

Depreciation charges for these capital expenditures were calculated using guidelines which differed slightly from what had been used in the pre-demonstration period. The use of straight-line depreciation on original bus cost over a ten-year life was accepted. Communications equipment was also depreciated over ten years. In addition, a number of smaller items were written off over shorter time periods. These items included start-up costs, which consisted largely of training, facilities renovation, office equipment, and materials. A very detailed analysis of these expenditures, based on economic life, is not worthwhile since they amount to only three percent of total capital expenditures. Therefore, they were treated in somewhat heterogeneous categories and were amortized over periods of time from two to four years. The resulting calculation produced only minor variations from PERT's original entries.

This calculation of depreciation charges is at best crude, but no better substitute was available. Depreciation on each bus could have been based on miles actually traveled or hours actually in service, but PERT did not consistently report either of these measures for individual buses. Consequently, a straight-line depreciation on original costs was used.

Definition of the Benefits for Hourly Personnel

The third accounting procedure which PERT altered at the beginning of the demonstration was the itemization of benefits for hourly personnel. During the pre-demonstration period, before April 1975, PERT management listed the wages of drivers and control room personnel as two separate items but grouped their benefits. Furthermore, the total benefits for these groups were not reported as a single item, but were spread among three separate categories, designated as employee welfare, pension contributions and payroll taxes. It was assumed that all operator and control room personnel benefits fell into one of these three categories, and that none of the benefits were claimed by other employees.

Under the UMTA guidelines, PERT aggregated wages and benefits and reported only two items, total remuneration for operators and control room personnel. As with the adjustment for differing accounting periods, the pre-demonstration records were changed to conform to the later records. This required identifying the benefit ratio (i.e., the ratio of benefits to total remuneration) for the earlier period. Unfortunately, the PERT records did not reveal the actual benefit rate for either employee group for that period. Given no basis for a more precise determination, an equal rate was assumed. The equal rate assumption was also suggested by the MIT staff supervising PERT. With the equal rate assumption, the average benefit rate over the pre-demonstration period was 14 percent. Were this equal allocation slightly in error, the error in total remuneration would be small, probably less than three percent.

Adjustment for Route 14 Costs

From June 24, 1974 to January 4, 1975, PERT operated one fixed-route, Route 14. Route 14 had been operated by RTS prior to this time. When off-peak service on Route 14 was eliminated, PERT began operating the route during the peak period but returned its operation to RTS in January 1975. During the period under PERT operation, the costs for this service had been included in PERT accounting records.

Because of the temporary nature of this operation and the fact that the evaluation of PERT focuses on the provision of demand-responsive services, Route 14 expenses were deleted in the calculations. Again using a vehicle-hour index, the costs assigned to Route 14 included its vehicle-hour share of maintenance, costs, fuel costs and operators' wages. These were each subtracted from the original PERT records. Approximately ten percent of the total PERT vehicle-hours were devoted to Route 14 during this time.

Inclusion of the Cost of Capital

No interest charges appeared in PERT's accounts, presumably because PERT received a substantial subsidy from a combination of local and federal funds, and hence did not have to borrow to make its capital purchases.

The exclusion of interest charges from PERT accounts implies that the opportunity cost of capital -- the rate of discount -- was zero. In general, some cost of capital has been included in the cost analysis, although which rate represents the RTS cost of capital is not clear. Moreover, other jurisdictions may face a different rate. Therefore, instead of selecting a single rate, the Chapter 7 and 10 analyses indicate costs using a zero percent interest rate, which is the rate implied in PERT's accounting. Chapter 7 also includes a ten percent annual interest rate. Comparison of the costs under these two assumptions, as well as interpolation between them, can be used for sensitivity analysis.

Sample Accounting Records

The following ten pages contain samples of the PERT financial reports issued monthly prior to the demonstration and every four weeks during the demonstration. For the period prior to the demonstration, all listed expenses were included in the assessment of PERT costs. For the demonstration period, MIT contract expenditures (line items 51.64 and 51.69) were excluded, since these costs were necessitated by the unique characteristics of the demonstration and are not likely to occur in other projects.

Following the sample accounting records is a listing of Greece DAB and work subscription costs and ridership for the 121 weeks between December 3, 1973 and March 27, 1976, the period of analysis for Greece costs.

PERsonal Transit

Regional Transit Service Incorporated

OPERATING EXPENSE FOR FEBRUARY 1975

	Month of February 1975		11 Months Ended 2/28/75	
	Amount	¢ Per Revenue Hour	Amount	¢ Per Revenue Mile
MAINTENANCE				
Vehicle Repair	$ 3,749		$ 18,356	
Vehicle Service	1,744		16,852	
Utilities	407		1,710	
Tire Rental	338		4,641	
Other Maintenance Expense	350		5,769	
Total Maintenance	$ 6,589	$ 2.32	$ 47,328	14.40
TRANSPORTATION				
Control Room - Salaries	$ 4,912		$ 40,732	
Operators Wages	22,077		209,640	
Motor Fuel	1,740		19,850	
Batteries	200		600	
Motor Oil	65		575	
Other Transportation Expense	182		1,531	
Total Transportation	$29,176	$10.26	$272,928	83.05
TRAFFIC PROMOTION	$ 19	$ .01	$ 594	.18
INSURANCE & SAFETY	$ 1,022	$ .36	$ 9,874	3.00
EMPLOYEE WELFARE	$ 1,677	$ .59	$ 14,343	4.52
PENSION	$ 553	$ .19	$ 4,650	1.42
GENERAL & ADMINISTRATIVE				
Salaries	$ 1,272		$ 12,017	
Telephone	38		2,635	
Equipment Maintenance	-0-		2,387	
Office Supplies & Expense	(74)		1,139	
Other General Expense	260		3,814	
Total General & Administrative	$ 1,496	$ .53	$ 21,992	6.69
PAYROLL TAXES	$ 2,370	$ .83	$ 22,741	6.92
RENTS				
Vehicle Accessories & Base Station	$ -0-		$ -0-	
Control Room Equipment	322		1,735	
Garage	750		8,231	
Total Rents	$ 1,072	$ .38	$ 9,966	3.03
SUBTOTAL	$43,973	$15.47	$404,925	123.21
DEPRECIATION & AMORTIZATION				
Revenue Vehicle Depreciation	$ 3,020		$ 25,390	
Other Equipment Depreciation	576		5,324	
Amortization - Control Room Cost	82		902	
Amortization - Development & Pre-Operating Costs	-0-		5,104	
Total Depreciation, Amortization	$ 3,678	$ 1.29	$ 36,720	11.17
TOTAL OPERATING EXPENSE	$47,651	$16.76	$441,645	134.38
Revenue Hours of Service	2,844			
Revenue Miles Operated			328,644	

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PERsonal Transit Division of

Regional Transit Service Incorporated

Information Report: SUMMARY OF PERT OPERATIONS FOR FEBRUARY 1975

	Month of February 1975	¢ Per Hour	Month of Feb. 1974	¢ Per Hour	11 Months ended Feb. 28, 1975	¢ Per Mile
OPERATING REVENUE						
Subscription Service Revenue	$ 3,309		$ 3,060		$ 28,354	
Dial-A-Ride Service Revenue	7,947		3,561		75,251	
Charter Revenue	259		-0-		1,993	
Advertising Revenue	-0-		-0-		-0-	
Other Revenue	-0-		-0-		-0-	
Total Operating Revenue	$ 11,515	4.05	$ 6,621	4.94	$ 105,598	
OPERATING EXPENSE						
Maintenance	$ 6,588	2.32	$ 3,286	2.45	$ 47,328	
Transportation	29,176	10.26	14,425	10.76	272,928	
Traffic Promotion	19	.01	-0-	-0-	594	
Insurance & Safety	1,022	.36	451	.34	9,874	
Employee Welfare	1,677	.59	859	.64	14,843	
Pension	553	.19	282	.21	4,660	
General & Administrative	1,496	.53	2,497	1.86	21,992	
Taxes	2,370	.83	1,017	.76	22,740	
Rents	1,072	.38	1,670	1.25	9,966	
Total Operating Expense	$ 43,973	15.47	$ 24,487	18.27	$ 404,925	
OPERATING RATIO	381.88		369.84		383.45	
OPERATING INCOME (LOSS)	$(32,458)	(11.42)	$(17,866)	(13.33)	$(299,327)	
OTHER INCOME & CHARGES						
Non-operating Income	$ -0-	-0-	$ -0-	-0-	$ -0-	
(Charges) to Income	(152)	(.05)	-0-	-0-	(1,863)	
Prior Period Adj. - Cr.	-0-	-0-	-0-	-0-	1,923	
Net Total Other Income & Charges	$ (152)	(.05)	$ -0-	-0-	$ (40)	
INCOME (LOSS) before depreciation	$(32,610)	(11.47)	$(17,866)	(13.33)	$(299,367)	
Depreciation - PERT Assets	$ 3,596	1.26	$ 2,116	1.58	$ 30,714	
Amortization	82	.03	1,273	.95	6,006	
Total Depreciation & Amortization	$ 3,678	1.29	$ 3,389	2.53	$ 36,720	
NET INCOME (LOSS)	$(36,289)	(12.76)	$(21,255)	(15.86	$(336,087)	

		Month of February 1975	Month of Feb. 1974	11 Months ended Feb. 28, 1975
Passengers:	Subscriptions	7,387	4,430	45,893
	Dial-A-Ride	9,097	4,388	88,540
	Total Passengers	16,484	8,818	134,433
Demands:	Subscriptions	6,986	4,252	41,113
	Dial-A-Ride	6,418	3,359	66,886
	Total Demands	13,404	7,611	107,999
Miles Operated		31,466	17,754	328,644
Revenue Hours of Service		2,844	1,340	26,839
Days Operated		24	20	437
Assistance from Authority:				
	Motorola Radio	-	-	$ 14,396
RG&E -	Electrobus	-	-	17,399
RCRTA				18,748
State Grant - 4 Test Vehicles		$ 84,350		84,350

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PERsonal Transit

Regional Transit Service Incorporated

SUBSIDIARY BALANCE SHEET FOR FEBRUARY 28, 1975

ASSETS

	Fixed Assets			
$212,135.16	Revenue Vehicle & Accessories			
	1 Electrobus	$ 34,797.10		
	4 Test Vehicles	84,350.00		
	7 Twin TC 25	212,135.16		
9,579.95	1 Ford Courier	9,579.95		
8,160.00	2 GM TDH4512	-0-		
	Radio (Ford Courier)	17,071.25		
	Digitial Printers	42,464.06	$400,397.52	
5,611.16	Other Equipment			
	Fare Boxes	$ 2,060.33		
	Auto	1,664.04		
	Furniture & Office Equipment	743.29		
	Miscellaneous Equipment:			
	Wall Map	859.38		
	Other	291.45	5,618.49	
$235,485.27	Total		$406,016.01	
28,740.83	Less: Reserve for Depreciation		56,087.38	
$207,745.44	Net Fixed Assets			$349,928.63

	Other Assets	Cost	Amortization	Net	
1,966.96	Control Room (being amortized over 24 mo)	$ 1,966.96	$ 1,557.24	$409.72	
553.52	Garage - Leasehold improvements (being amortized over 12 mo)	553.52	553.52	-0-	
14,288.93 (8,344.78)	Pre-operating & Development Expenditures (being amortized over 12 mo)	14,288.93	14,288.93	-0-	
$ 7,964.63	Total	$16,809.41	$16,399.69		409.72
$215,710.07	Total Assets				$350,338.35

LIABILITIES

$ 137.06	Outstanding PERT Tickets	$ 152.56	
1,205.77	Reserve for Injuries & Damages	4,876.94	
214,367.24	Advances from RTS	210,415.50	
-0-	Advances from RGRTA & RG&E	50,543.35	
-0-	State Grant 4 Test Vehicles	84,350.00	
$215,710.07	Total Liabilities		$350,338.35

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3-14-75

UMTA BUDGET REPORT
D/R DEMONSTRATION PROJECT
116 WEEKS ENDED 6/19/77
PROJECT BUDGET VS. PROJECT EXPENSES

		Total Project Budget	Accumulated Expenses To Date	Expense 4 Weeks Ended 6/19/77
51.14.00	Direct Labor - Mgr'l. Technical & Prof.	$ 157,618	$ 76,741	$ 4,277
51.20.00	Employee Benefits	26,080	11,769	887
51.48.00	Materials/Equipment: Purchase, Lease, Rent	38,391	38,143	4,815
51.51.00	Transit Operations - Net	1,604,700	1,542,565	49,617
51.61.00	Facilities Renovation	79,175	77,295	1,000
51.64.00	M.I.T. Contract	1,158,959	957,948	18,490
51.66.00	Other Services	4,500	4,433	-0-
51.67.00	Subcontractor-Construction Work	10,320	10,206	-0-
51.69.00	M.I.T. Contract (Data Collection)	144,200	107,614	403
51.80.00	Other Project Costs	218,960	218,926	6,209
	Total	$3,442,903	$3,045,640	$85,698
51.99.00	Contingencies	203,697	-0-	-0-
	Grand Total	$3,646,600	$3,045,640	$85,698

JON:epk

	Expenses 4 Weeks Budgeted	Expenses 4 Weeks Ended 6/19/77	Expenses 116 Weeks Budgeted	Expenses 116 Weeks Ended 6/19/77
Maintenance				
Wages & Benefits		$ 6,117		$ 168,330
Tire Rental		906		15,330
Bus Parts		1,840		102,383
Repairs Shop Equipment		-0-		223
Garage Rent		750		21,000
		$ 9,613		$ 307,266
Transportation				
Wages & Benefits		$28,881		$ 988,374
Fuel & Oil		4,355		111,739
Battery Rental		-0-		3,200
		$33,236		$1,103,313
Total Transportation Costs		$42,849		$1,410,579
Control Room Wages & Benefits		$ 9,291		$ 270,297
R.T.S. Rent		263		7,923
Gas & Electric		254		9,029
Key Punch Rent		270		6,655
Rent, Comm. Equipment		-0-		15,611
Main. Comm. Equipment		1,341		24,707
Telephone		1,333		28,568
Courier Service		697		20,883
Other		549		24,110
		$13,998		$ 407,783
Total Operating Expenses	$54,841	$56,847	$1,861,427	$1,818,362
Revenue	$11,600	$ 7,230	$ 305,893	$ 286,394
Advertising	-0-	-0-	-0-	210
		$ 7,230		$ 286,604
Net Operating Expenses		$49,617		$1,531,758
Insurance		$ -0-		$ 9,487
Communications Equipment		-0-		1,320
Batteries Purchased		-0-		-0-
		$49,617		$1,542,565

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Period		Productivity	Vehicle Hours	Riders	Cost Per Hour	Cost Per Passenger	Revenue Per Passenger
01	Budgeted	5.5	2,900	15,950	14.71	2.67	.66
	Actual	5.34	2,863	15,293	13.77	2.58	.63
02	Budgeted	5.3	2,900	15,370	14.81	2.79	.66
	Actual	5.38	2,841	15,295	14.85	2.76	.65
03	Budgeted	5.2	2,900	15,080	14.92	2.87	.66
	Actual	5.46	2,679	14,628	15.88	2.91	.65
04	Budgeted	5.3	2,900	15,370	15.03	2.84	.66
	Actual	5.39	2,553	13,750	15.56	2.89	.62
05	Budgeted	5.6	2,900	16,240	15.14	2.70	.66
	Actual	5.5	2,659	14,591	15.63	2.84	.63
	Budgeted	5.6	2,900	16,240	15.25	2.72	.66
	Actual	5.79	2,690	15,566	16.27	2.78	.65
07	Budgeted	6.0	2,900	17,400	15.36	2.56	.66
	Actual	5.57	2,931	16,335	14.79	2.65	.63
08	Budgeted	7.0	2,900	20,300	15.48	2.21	.66
	Actual	5.5	2,910	16,021	15.42	2.80	.65
09	Budgeted	7.5	2,900	21,750	15.59	2.08	.66
	Actual	5.84	2,800	16,358	18.15	3.11	.67
10	Budgeted	8.0	2,900	23,200	15.70	1.96	.66
	Actual	5.66	2,628	14,870	19.70	3.48	.64
11	Budgeted*	6.8	6,000	40,800	14.99	2.20	.66
	Actual	5.19	2,967	15,402	17.26	3.32	.65

Assumes Start-Up of Irondequoit Service

#12	Combined Budgeted	7.3	6,000	43,800	15.10	2.07	.66
	Actual	4.91	3,075	15,097	16.96	3.45	.63
	Combined Budgeted	7.5	6,000	45,000	15.21	2.03	.66
	Actual	5.12	3,043	15,592	18.21	3.55	.61
#14	Combined Budgeted	5.4	6,000	32,400	13.92	2.58	.70
	Actual Irondequoit	6.0	1,167	7,018 (est.)			
	Actual Greece	4.8	3,008	14,342			
	Combined Actual	5.1	4,175	21,360	19.05	3.72	.46
#15	Combined Budgeted	5.5	6,000	33,000	14.00	2.55	.70
	Actual Irondequoit	6.8	2,301	15,652			
	Actual Greece	4.5	3,050	13,848			
	Combined Actual	5.5	5,351	29,500	13.90	2.52	.43
#16	Combined Budgeted	5.5	6,000	33,000	14.08	2.56	.70
	Actual Irondequoit	7.4	2,106	15,628			
	Actual Greece	4.3	2,673	11,411			
	Combined Actual	5.7	4,779	27,039	17.80	3.14	.38
#17	Combined Budgeted	5.0	5,280	26,500	16.86	3.36	.51
	Actual Irondequoit	6.4	1,920	12,336			
	Actual Greece	4.9	2,326	11,508			
	Combined Actual	5.6	4,246	23,844	20.15	3.58	.45
#18	Combined Budgeted	5.2	5,280	27,360	16.99	3.27	.50
	Actual Irondequoit	6.6	2,028	13,473			
	Actual Greece	5.0	2,520	12,577			
	Combined Actual	5.7	4,548	26,050	18.04	3.15	.42
#19	Combined Budgeted	5.7	5,280	30,000	17.11	3.01	.50
	Actual Irondequoit	6.8	1,917	13,091			
	Actual Greece	5.3	2,366	12,532			
	Combined Actual	6.0	4,283	25,623	19.82	3.31	.44

Period	Productivity	Vehicle Hours	Riders	Cost Per Hour	Cost Per Passenger	Revenue Per Passenger
#20 Combined Budgeted	5.9	5,120	30,400	17.09	2.88	.44
Actual Irondequoit	7.4	2,024	14,928			
Actual Greece	5.1	2,604	13,324			
Combined Actual	6.1	4,628	28,252	18.39	3.01	.41
#21 Combined Budgeted	6.4	5,120	32,960	17.19	2.67	.44
Actual Irondequoit	8.0	2,022	16,275			
Actual Greece	5.2	2,579	13,338			
Combined Actual	6.4	4,601	29,613	19.34	3.00	.38
#22 Combined Budgeted	6.7	5,120	34,400	17.29	2.57	.44
Actual Irondequoit	8.0	1,822	14,624			
Actual Greece	5.4	2,396	12,998			
Combined Actual	6.5	4,218	27,622	21.10	3.22	.45
#23 Combined Budgeted	6.9	5,120	35,520	17.38	2.50	.44
Actual Irondequoit	8.2	1,578	12,952			
Actual Greece	5.9	2,115	12,584			
Combined Actual	6.9	3,693	25,536	24.44	3.53	.35
#24 Combined Budgeted	5.9	2,767	16,460	18.81	3.16	.56
Combined Actual	6.4	2,268	14,473	25.88	4.05	.55
Budgeted Irondequoit	5.4	968	5,240			
Actual Irondequoit	6.5	719	4,686			
Budgeted Greece	6.2	1,800	11,220			
Actual Greece	6.3	1,549	9,787			
Budgeted Handicapped	2.0	70	140			.50
Actual Handicapped	1.9	52	97			.50

	Productivity	Vehicle Hours	Riders	Cost Per Hour	Cost Per Passenger	Revenue Per Passenger
#25 Combined Budgeted	5.9	2,980	17,348	18.42	3.08	.53
Combinded Actual	6.0	2,545	15,253	18.85	3.14	.55
Budgeted Greece	6.3	1,784	11,188			
Actual Greece	5.9	1,701	10,009			
Budgeted Irondequoit	5.9	900	5,360			
Actual Irondequoit	6.2	844	5,244			
Budgeted Handicapped	3.5	224	800			
Actual Handicapped	4.8	123	592			
#26 Combined Budgeted	6.30	2,980	18,772	18.08	2.87	.54
Combined Actual	5.61	3,012	16,909	20.77[1]	3.70[1]	.45
Budgeted Greece	6.76	1,776	12,012			
Actual Greece	5.87	1,862	10,925			
Budgeted Irondequoit	6.31	900	5,680			
Actual Irondequoit	5.58	932	5,201			
Budgeted Handicapped	3.55	304	1,080			
Actual Handicapped	3.59	218	783			
#27 Combined Budgeted	6.49	3,064	19,880	17.69	2.73	.55
Combined Actual	6.03	2,687	16,206	21.70	3.34	.52
Budgeted Greece	7.06	1,776	12,540			
Actual Greece	6.66	1,611	10,730			
Budgeted Irondequoit	6.53	904	5,900			
Actual Irondequoit	5.66	802	4,538			
Budgeted Handicapped	3.75	384	1,440			
Actual Handicapped	3.42	274	938			
#28 Combined Budgeted	6.68	3,064	20,456	17.79	2.67	.57
Combined Actual	6.32	2,663	16,823	19.63	3.11	.44
Budgeted Greece	7.24	1,776	12,856			
Actual Greece	7.04	1,599	11,263			
Budgeted Irondequoit	6.64	904	6,000			
Actual Irondequoit	5.63	773	4,351			
Budgeted Handicapped	4.17	384	1,600			
Actual Handicapped	4.15	291	1,209			

Footnote:

Amount indicated in Footnote 1 of Financial Report ($30,014) has been excluded in statistical computations for purposes of comparability.

	Productivity	Vehicle Hours	Riders	Cost Per Hour	Cost Per Passenger	Revenue Per Passenger
#29 Combined Budgeted	6.70	3,144	21,052	17.44	2.60	.55
Combined Actual	6.10	2,440	14,893	23.29	3.82	.48
Budgeted Greece	7.36	1,776	13,072			
Actual Greece	6.60	1,495	9,879			
Budgeted Irondequoit	6.75	904	6,100			
Actual Irondequoit	5.81	672	3,906			
Budgeted Handicapped	4.17	464	1,880			
Actual Handicapped	4.06	273	1,108			
		TO DATE				
Combined Budgeted	6.30	116,847	736,008	15.93	2.53	.42
Combined Actual	5.75	96,522	555,199	18.78	3.27	.52

WEEKLY COSTS USED IN GREECE DIAL-A-BUS AND WORK SUBSCRIPTION MARGINAL COST ANALYSIS

WEEK	DAB COST	SUB COST	DAB PASS	DAB TRIPS	SUB PASS
18	$ 5068.86	$ 1160.11	1210.	865.	774.
19	$ 5016.86	$ 1160.91	1055.	846.	793.
20	$ 4863.16	$ 1163.87	1144.	893.	719.
21	$ 5022.31	$ 464.50	997.	593.	311.
22	$ 4972.44	$ 1015.81	736.	561.	466.
23	$ 4653.05	$ 1263.96	884.	746.	883.
24	$ 5328.27	$ 1264.66	1032.	748.	919.
25	$ 4476.64	$ 1262.86	918.	654.	908.
26	$ 4437.20	$ 1286.07	957.	699.	905.
27	$ 4645.71	$ 1370.54	1075.	796.	896.
28	$ 4604.55	$ 1369.20	1069.	813.	852.
29	$ 4768.51	$ 1367.17	1650.	951.	853.
30	$ 4627.22	$ 1362.48	1210.	818.	1082.
31	$ 4443.34	$ 1318.74	1086.	802.	993.
32	$ 4662.61	$ 1318.56	1092.	815.	969.
33	$ 4503.57	$ 1314.92	1238.	907.	1003.
34	$ 4419.87	$ 1317.01	1109.	850.	895.
35	$ 4747.64	$ 1299.56	1186.	897.	895.
36	$ 4682.62	$ 1299.71	1361.	971.	649.
37	$ 2997.97	$ 778.39	862.	549.	443.
38	$ 3857.53	$ 1036.71	1202.	906.	497.
39	$ 4474.42	$ 1256.95	1082.	826.	620.
40	$ 4274.87	$ 1212.50	1117.	851.	484.
41	$ 3987.26	$ 1213.61	1025.	810.	547.
42	$ 4198.51	$ 1209.14	1021.	788.	503.
43	$ 3218.84	$ 970.43	772.	613.	374.
44	$ 4552.65	$ 1305.32	987.	731.	421.
45	$ 4577.91	$ 1327.56	1045.	776.	469.
46	$ 4483.36	$ 1306.90	1125.	794.	493.
47	$ 6737.83	$ 1631.53	2004.	1299.	493.
48	$ 4737.31	$ 1077.22	1548.	1078.	292.
49	$ 5144.34	$ 1143.23	2195.	1326.	464.
50	$ 5899.62	$ 1345.92	2247.	1364.	494.
51	$ 5725.56	$ 1349.45	1930.	1319.	559.
52	$ 6069.98	$ 1410.80	2002.	1326.	554.
53	$ 6245.84	$ 1487.28	2023.	1354.	673.
54	$ 5893.79	$ 1492.43	1922.	1231.	563.
55	$ 6018.36	$ 1488.96	2079.	1244.	542.
56	$ 6127.38	$ 1490.89	2078.	1306.	497.
57	$ 4478.20	$ 1480.39	1716.	1178.	464.
58	$ 8475.95	$ 1933.90	1929.	1509.	603.
59	$ 8664.32	$ 1931.03	2119.	1611.	579.
60	$ 8693.11	$ 1934.61	2207.	1678.	586.
61	$ 8686.99	$ 1826.80	3029.	2283.	602.
62	$ 8046.82	$ 1800.61	2225.	1724.	679.
63	$ 8363.08	$ 1768.42	2755.	1821.	682.
64	$ 8069.60	$ 1800.33	2231.	1755.	663.
65	$ 8185.05	$ 1824.12	2471.	1832.	673.

66	$ 8249.84	$ 1876.96	2529.	1861.	722.
67	$ 8275.16	$ 1861.44	2722.	1984.	719.
68	$ 8436.96	$ 1884.61	2769.	2075.	781.
69	$ 7228.54	$ 1132.61	2071.	1474.	467.
70	$ 8939.03	$ 2037.20	2753.	2047.	899.
71	$ 9471.10	$ 2037.69	2932.	2175.	944.
72	$ 9292.02	$ 2035.83	2807.	2153.	877.
73	$ 6982.38	$ 782.96	2381.	1550.	202.
74	$ 6958.56	$ 1825.09	2185.	1548.	573.
75	$ 9303.14	$ 2228.57	2624.	2155.	914.
76	$ 9227.75	$ 2224.93	2530.	2178.	902.
77	$ 8780.35	$ 2229.71	2437.	1940.	900.
78	$ 9225.77	$ 2225.46	2553.	2099.	908.
79	$ 9164.24	$ 1844.93	2723.	2282.	911.
80	$ 9542.99	$ 1836.73	2882.	2324.	912.
81	$10119.60	$ 1839.63	3168.	2449.	846.
82	$ 9655.61	$ 1830.86	2661.	2286.	851.
83	$ 9719.52	$ 1695.08	2929.	2430.	812.
84	$ 9775.31	$ 1693.70	2807.	2315.	792.
85	$10556.80	$ 1695.23	2878.	2337.	768.
86	$10319.50	$ 1359.50	3095.	2383.	622.
87	$ 8642.27	$ 1653.47	2479.	1889.	705.
88	$ 8954.18	$ 1653.54	2831.	2378.	728.
89	$ 9448.49	$ 1650.20	2661.	2232.	705.
90	$ 9234.98	$ 1648.91	2670.	2118.	742.
91	$ 9854.04	$ 1765.90	2603.	2134.	676.
92	$ 9632.21	$ 1758.47	2820.	2313.	642.
93	$ 9611.38	$ 1763.46	2715.	2199.	661.
94	$ 9796.13	$ 1545.68	2459.	2038.	622.
95	$ 9597.82	$ 1449.71	2332.	1760.	508.
96	$11540.00	$ 1820.55	2640.	2147.	645.
97	$11339.00	$ 1819.70	2644.	2238.	638.
98	$11327.00	$ 1645.90	2990.	2388.	665.
99	$10266.80	$ 1541.40	2993.	2154.	622.
100	$ 8697.57	$ 1230.87	2260.	1695.	371.
101	$10596.10	$ 1541.11	2878.	2154.	589.
102	$11034.00	$ 1539.91	2918.	2197.	558.
103	$10460.40	$ 1540.66	2595.	2133.	634.
104	$10051.50	$ 1521.34	2693.	2084.	580.
105	$11249.50	$ 1544.23	3075.	2333.	638.
106	$10919.30	$ 1542.77	2928.	2177.	612.
107	$11120.50	$ 1564.34	3045.	2262.	513.
108	$11771.80	$ 1560.43	3228.	2275.	568.
109	$ 9218.31	$ 1248.21	2662.	2101.	479.
110	$11046.50	$ 1974.77	2895.	2456.	637.
111	$10135.30	$ 1834.81	2798.	2336.	664.
112	$10030.90	$ 1840.28	2671.	2199.	695.
113	$10785.40	$ 1838.34	2916.	2436.	653.
114	$10951.70	$ 1837.42	2955.	2503.	631.
115	$10397.80	$ 1866.03	3058.	2393.	608.

116	$10353.70	$ 1867.68	2767.	2350.	696.
117	$11019.60	$ 1869.70	2775.	2301.	698.
118	$10005.40	$ 1869.69	2849.	2381.	749.
119	$11940.00	$ 2244.58	3072.	2397.	725.
120	$12326.70	$ 2247.89	2990.	2250.	751.
121	$11132.20	$ 1497.23	2474.	1903.	415.
122	$13024.50	$ 2241.85	3191.	2618.	768.
123	$13550.10	$ 2383.30	3156.	2458.	835.
124	$13717.30	$ 2390.86	2776.	2265.	781.
125	$11669.10	$ 1191.44	2474.	1812.	379.
126	$11845.80	$ 1093.26	2452.	1692.	310.
127	$13019.80	$ 1857.95	2650.	2189.	807.
128	$13562.30	$ 1859.95	2227.	1823.	833.
129	$12592.00	$ 1855.91	2252.	1863.	852.
130	$13271.70	$ 1860.24	2490.	1931.	828.
131	$13359.50	$ 1835.04	2437.	2030.	841.
132	$14161.10	$ 1837.58	2556.	2030.	840.
133	$13809.10	$ 1841.83	2639.	1955.	805.
134	$13238.60	$ 1842.29	2115.	1801.	775.
135	$14455.60	$ 1971.58	2520.	2095.	813.
136	$14468.80	$ 1972.05	1973.	1982.	862.
137	$14594.70	$ 1974.87	2620.	2120.	814.
138	$14555.20	$ 1974.87	2444.	2013.	765.

NOTE: WEEK 18 REPRESENTS WEEK OF DEC. 3, 1973

WEEK 138 REPRESENTS WEEK OF MARCH 22, 1976

MARGINAL COST ANALYSIS BASED ON WEEKS 19-126 ONLY

(January to March 1976's sharply declining ridership coupled with rising costs due to vehicle problems would distort estimates of marginal costs.)

APPENDIX A.20

DIAL-A-BUS COMPARED TO DEMAND-RESPONSIVE SYSTEMS IN OTHER CITIES

This appendix compares dial-a-bus service in Greece and Irondequoit with demand-responsive services in other cities. This comparison is intended to allow an evaluation of the Rochester experience in light of the experiences of a variety of other cities. The findings resulting from the analysis in this appendix are included in Sections 6.1.1, 7.2.1, 7.2.2, 9.1.1 and 10.2.

The comparative analysis is based on data from the Paratransit Integration Guidelines and Appendices (Draft) prepared for the Transportation Systems Center of the U.S. Department of Transportation by SYSTAN, Inc., July 1978 (henceforth referred to as the Guidelines). This comprehensive study identified and surveyed 311 operating paratransit systems in the United States and Canada. When surveys were returned to SYSTAN with gaps in information, the data was recorded, and the questionnaire was subsequently returned to the respondent for completion. Frequently, operators enclosed additional background material including annual ridership and financial reports. In these cases, SYSTAN personnel completed the surveys, verifying the data through telephone conversations with the respective operators. As there are obvious dangers in comparing relatively incomplete data obtained from differing sources to data obtained objectively and exhaustively in Rochester, the following analysis focuses on systems for which fairly complete data were received. Data collected from paratransit services for special target market groups, such as the elderly and handicapped were also eliminated from the analysis, resulting in a study sample of 71 systems, including 44 dial-a-bus (DAB) systems and 27 shared-ride taxi (SRT) systems. Exhibit A.20-1 contains service area, supply, demand, level of service, productivity and economic data for these 71 systems, with comparable DAB statistics compiled for Greece and Irondequoit based on their two stable operating periods. The sample size, median, mean and range for the system characteristic values are included. It is evident from noting the range and values that existing paratransit services vary greatly. The arithmetic mean can be greatly altered by these extreme values, and may therefore be less useful as an indicator of the "typical" characteristics than the median. The median is thus used in the following analysis to provide a sense of the typical or average system.

Ridership and Market Penetration

In 1977, PERT operated much shorter hours than other systems. Greece DAB operated 8.0 hours per day and Irondequoit averaged 7.5, while most demand- responsive systems were averaging 12 hours per day. The PERT DAB nominal fares of $1.00 during 1975 and 1976 and $1.25 in 1977, were also higher than that reported by any other DAB system. Sixty percent of the system respondents charged a $0.50 base fare.

EXHIBIT A.20-1

CHARACTERISTICS OF 44 DIAL-A-BUS AND 27 SHARED-RIDE TAXI SYSTEMS

					GREECE		IRONDEQUOIT	
	Sample Size	Median	Mean	Range	Mar-Dec 1975	Feb-May 1977	Sep-Dec 1976	Jan-June 1977
Service Area Population	70	24,419	43,397	2600-315,000	68,820	50,000(est)	40,295	40,295
Service Area Size (sq.mi.)	70	9.6	71.9	1.6-1019.0	15.2	10.7	8.6	8.6
Population Density	69	2,462	3,659	12-18,733	4,802	4,673(est)	4,685	4,685
Daily Service Hours	60	11.9	11.7	7-18	13.9	8.0	11.0	7.5
Base Fare	54	$0.50	$0.47	$.15-1.00	$1.00	$1.25	$1.00	$1.25
Weekday Ridership	69	219	278	14-2466	477	150	105	55
Riders/Sq.Mi./Hour	58	1.71	2.59	0.01-9.26	2.26	1.76	1.11	0.84
Riders/1000 Residents/Day	68	8.33	12.34	0.8-87.5	6.93	3.00(est)	2.61	1.36
Passengers/Vehicle-Hour	55	5.66	5.64	1.9-9.65	5.00	3.88	3.31	2.75
Costs/Vehicle-Hour ($)*	35	9.95	10.63	3.69-22.04	19.22	32.66	24.82	32.66
Cost/Passenger ($)*	40	1.68	2.32	0.70-18.12	3.84	8.42	7.50	11.88
Driver Basic Wage Rate ($)	20	3.52	3.87	3.00-6.87	5.96	6.67	6.60	6.60

*Reporting periods vary, but are generally in 1976 and 1977.

These factors, shorter operating hours and higher fares, can be expected to reduce PERT demand relative to other cities. The 1977 Greece and Irondequoit service area sizes were very close to the median for the 71 systems. However, population density was nearly twice as high. Most of the systems examined were from small cities rather than more densely developed metropolitan areas like Rochester. Consequently, the median population density was only about 2500 persons per square mile.

Market penetration (riders/1000residents/day) in Greece during 1975 was 6.9, only slightly less than the 8.3 experienced by the typical dial-a-ride system. From September 1976 through January 1977, DAB ridership in Greece declined dramatically before stabilizing at 150 passengers per day in the Spring of 1977. This resulted in a much lower market penetration than experienced in other systems. Irondequoit DAB never achieved high daily ridership levels relative to population, resulting in market penetration values of 2.6 in 1976 and 1.4 in 1977, which are significantly lower than the average of the other systems.

However, numerous factors such as the demographic characteristics of the population served, the level of service provided, the fare charged, the number of hours the service operates, the service area size and geographical characteristics, as well as the availability and quality of alternative transportation modes and services may affect the degree of market penetration a DAB service achieves. In order to determine if the Greece and Irondequoit market penetration were unusually low relative to these factors, regression equations were run on 40 general market demand-responsive transit systems that reported the most complete data, had service areas that were smaller than 50 square miles, and had less than 200,000 population. Only these systems were considered in order to eliminate distortion from the exceptionally large areas or high density systems which would not be comparable to Greece and Irondequoit.

The best explanation for DAB daily ridership levels was provided by service area population and the number of hours the service operated, as shown by the first regression equation in Exhibit A.20-2 (R^2 = .51). No other variables for which data were available had any significant effect on demand. Adding service area size, for example, only increased the R^2 value to .52.

Based on this equation, the estimated demand in Greece from March to December 1975 would be 401, and from February to March 1977, 114 riders per day. Greece DAB actually achieved a higher than average demand, recording ridership levels of 477 and 150 daily passengers respectively. In Irondequoit 222 daily DAB passengers during the fall of 1976

EXHIBIT A.20-2

Regression Equation Based on 40 General Market DAR Systems:*

	R^2
1. $\text{DAILY RIDERSHIP} = \underset{(111)}{-323} + \underset{\substack{(.0005)\\ [15.3]}}{.00198}\ (\text{Service Area Pop}) + \underset{\substack{(7.8)\\ [29.1]}}{42.3}\ (\text{Daily Service Hours})$	.51
2. $\text{VEHICLE PRODUCTIVITY (PAX/VEH-HR)} = \underset{(1.23)}{4.89} + \underset{\substack{(.09)\\ [31.4]}}{.503}\ (\text{Riders/Sq.Mi./Hr})$	.45
3. $\text{VEHICLE PRODUCTIVITY (PAX/VEH-HR)} = \underset{(1.23)}{5.31} + \underset{\substack{(.55)\\ [31.3]}}{3.10}\ (\text{Log of Riders/Sq.Mi./Hr})$	.45

PERT COMPARISONS WITH REGRESSION PREDICTION OF RIDERSHIP AND VEHICLE PRODUCTIVITY

Area	Time Period	Service Area Pop.	Service Hours	Daily Ridership			Two-Sided Significance Level(α)	Demand Density	Log (Demand Density)
				Actual	Predicted	Difference			
Greece	Mar-Dec 1975	68,820	13.9	477	401	+76	.50	2.26	.354
Greece	Feb-May 1977	50,000(est)	8.0	150	114	+36	.74	1.76	.246
Irondequoit	Sep-Dec 1976	40,295	11.0	105	222	-117	.31	1.11	.045
Irondequoit	Jan-Jun 1977	40,295	7.5	55	74	-19	.86	0.84	-.076

Area	Vehicle Productivity			Difference		Two-Sided Significance Level (α)	
		Predicted					
	Actual	I(linear)	II(log)	I	II	I	II
Greece	5.00	6.03	6.41	-1.03	-1.41	.42	.27
Greece	3.88	5.78	6.07	-1.90	-2.19	.14	.09
Irondequoit	3.31	5.45	5.45	-2.14	-2.14	.10	.10
Irondequoit	2.75	5.31	5.07	-2.56	-2.32	.05	.07

*() enclose standard errors
[] enclose f-values

and 74 daily DAB passengers from January to June 1977 were predicted by this empirically-based regression, although this system only actually carried 105 and 55 daily riders respectively.

Because of the wide variation in the other systems' ridership, a relatively high standard error of 111 resulted. Therefore, none of these differences were found to be statistically significant. It should also be noted that the number of daily service hours may have both a causal and effectual relationship with demand. When ridership is high, DAB management may wish to extend the hours of service, or alternatively, cut back the number of hours of operation if demand falls too low, as was done in Rochester in January 1977.

Unfortunately, data for the variables which might explain the variation in demand levels most accurately were not available or sufficient for modeling purposes. The other communities did not supply information on alternative transit services and service level data. Therefore, all results are based on the false assumption that service levels are roughly equivalent for all systems. And due to the small variation in fares reported by the other systems, no measurable impact of fares or ridership could be found. However, the much higher base fare in Greece and Irondequoit probably decreased ridership relative to the other systems. Also, it is likely that there is less alternative transit in the small cities where the other systems are located than in Greece and Irondequoit. These factors probably caused the lower PERT market penetration but the unavailability of data for the other systems prevents this hypothesis from being verified.

Productivity and Economics

DAB vehicle productivities in Greece averaged 5 passengers per vehicle hour in 1975 slipping to slightly less than 4 riders per hour in 1977. The other demand-responsive systems had vehicle productivities averaging 5.65, with most operating between the 4 to 8 passengers per vehicle hour range. Irondequoit experienced much lower vehicle productivities averaging 3.3 from September to December 1976 and decreasing to about 2.8 during 1977. Demand density in Greece during this period was fairly typical. Irondequoit may have experienced low vehicle productivities due to the relatively small number of passengers served per square mile.

At the same time, operating costs per vehicle hour in Rochester were two to three times the average of the other systems analyzed. In 1975, Greece averaged $3.84 per DAB passenger, still more than double the $1.68 median costs per rider reported for the other systems. Thereafter, PERT total expenses increased at a faster rate, such that by 1977 average DAB costs per passenger reached $8.42 in Greece and $11.88 in Irondequoit. Even the higher base fares collected in Rochester could not offset these excessive per passenger costs.

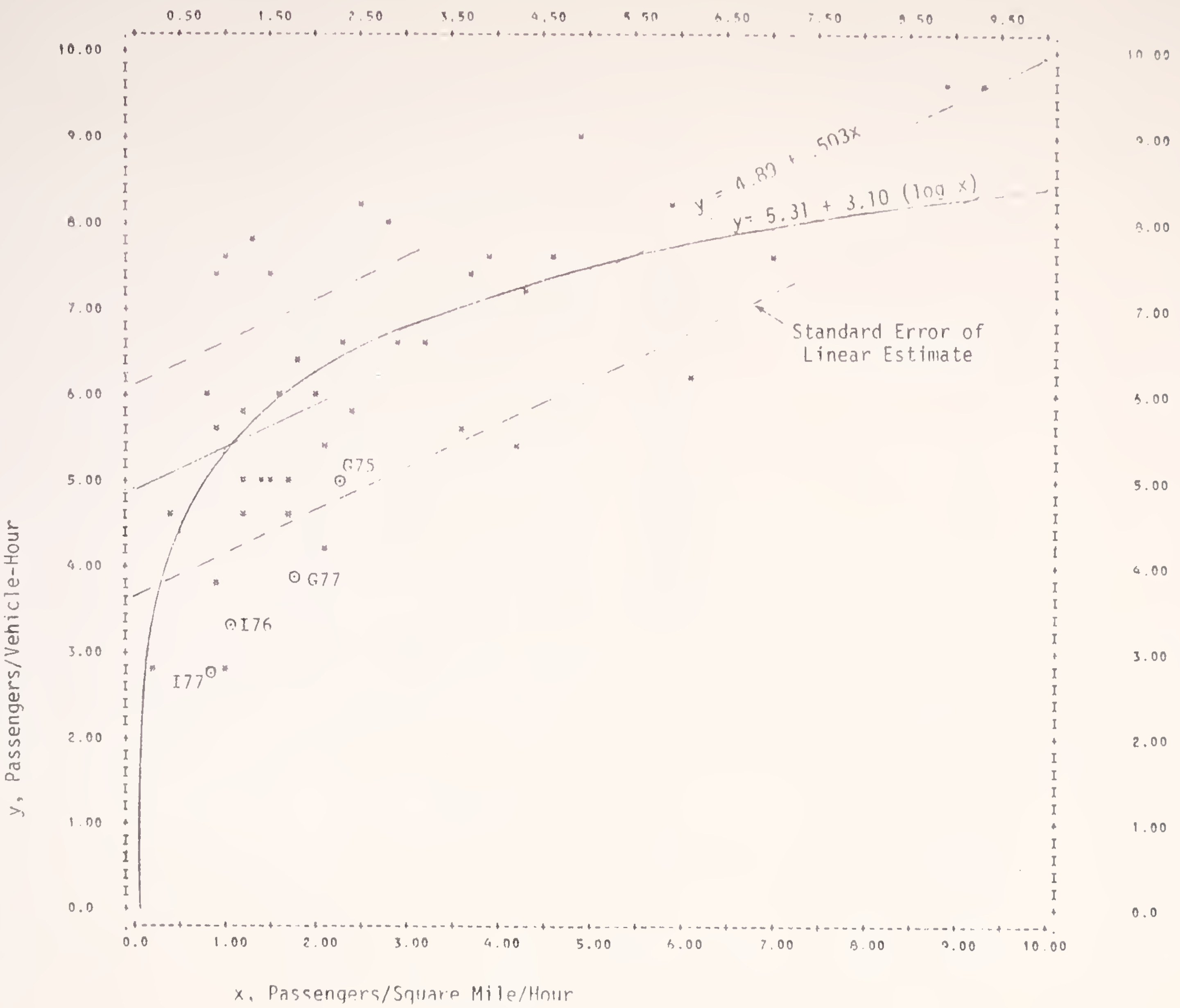
A comparison of major capital and operating cost components shows each PERT cost exceeding the average of the other DAB systems. However, it is interesting to note the proportional cost variations. In 20 systems that reported driver wages, the hourly driver wage was about 36% of the total cost per vehicle-hour. The Greece driver wage rate was 31% of the total DAB vehicle-hour cost in 1975, and by 1977, the driver wage rate was only 20% of Greece and Irondequoit's total cost per vehicle-hour. Since PERT acquired many new vehicles in early 1977 after management experienced numerous vehicle breakdowns and problems in late 1975 and 1976, capital depreciation, maintenance and management expenses were accounting for a greater proportion of the total costs during this period.

To determine if Rochester DAB vehicle productivities were significantly different than expected, a regresssion analysis was performed based on the set of 40 comparable demand-responsive systems. Demand density (riders/square mile/hour) was strongly correlated with vehicle productivity (r = +.67), but the service area size and the number of hours of operation were found to have no additional effect on DAB's level of efficiency. Both linear and logarithmic relationships between vehicle productivity and demand density were developed. However, the level of predictability was almost identical as shown in Equations 2 and 3 in Exhibit A.20-2.

Using these empirically based equations, Greece should achieve vehicle productivites of about 6, and Irondequoit is estimated at over 5 passengers per vehicle hour. Actual DAB vehicle productivities in Rochester were thus below the averages of the other systems, as graphically depicted in Exhibit A.20-3. The relatively small standard error of 1.23 is shown by the dotted lines. Therefore, although the R^2 value for this equation is slightly less than in the daily ridership regression (see Equation 1 in Exhibit A.20-2), the variation in data is much smaller so that the differences between the actual and predicted vehicle productivities are fairly significant, except for Greece in 1975.

It is also interesting to note that the four PERT points shown in Exhibit A.20-3 form a fairly straight line, with a large upward slope. This would seem to indicate that much higher vehicle productivities could be achieved in Rochester if demand density rose.

EXHIBIT A.20-3



APPENDIX A.21

REPORT OF NEW TECHNOLOGY

REPORT OF NEW TECHNOLOGY

The work performed under this contract, while not leading to any new technology, has made use of existing methodologies as required to complete a comprehensive analysis of findings available on the implementation and operation of the demonstration project. These findings will be useful to other communities throughout the United States in the planning and design of improved public transportation services.

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